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*Supportability Investment Decision Analysis Center*

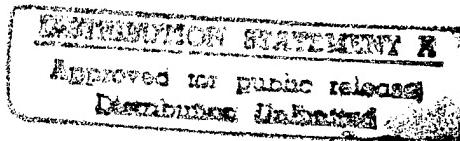
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## TECHNICAL REPORT (Baseline Process Analysis Report)

for

### Investment Decision for Using Radio Frequency Technologies in the Standard Base Supply System



Prepared for

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200 East Moore Drive  
Bldg. 888, Room 2023  
Maxwell Gunter Annex, AL 36114-3004

1 August 1996

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FOR THE COMMANDER

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## **PREFACE**

This document is intended to provide HQ SSG/LGSW and the USAF AIT Office a baseline definition of the processes through which a notional base-level supply squadron receives, stores, and issues materiel. As required by the contractor's Statement of Work, a draft of this report was provided to HQ SSG/LGSW for opportunity to comment on the information contained herein prior to submission of this final document. Written comments received as a result of the government review were either incorporated into this document, or subsequent discussion with the government resulted in exclusion from the final report. In addition, minor editorial changes have been made for clarification of material in key areas.

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## **GLOSSARY OF ACRONYMS**

NOTE: This is a standardized acronym listing. Some of the acronyms listed may not appear in this report.

### A

ACC	Air Combat Command
ADP	Automated data processing
ADPE	Automated data processing equipment
ADPS	Automated data processing system
ADS	Automated data system
AF	Air Force
AFB	Air Force base
AFCC	Air Force Communications Command
AFM	Air Force manual
AFMC	Air Force Materiel Command
AFNET	Air Force network
AFOLDS	Air Force on-line data system
AFORMS	Air Force operations resource management system
AFR	Air Force regulation
AFRES	Air Force Reserve
AFSC	Air Force specialty code
AFSC	Air Force Systems Command
AIS	Automated information system
ALC	Air Logistics Center
AMC	Air Mobility Command
ANG	Air National Guard
APP	Application portability profile
ASCII	American standard code for information interchange
ATC	Air Training Command

### B

BCR	Barcode reader
BLSM	Base-level system modernization
BOS	Base operating support

BPIP	Business Process Improvement Program
BY	Base year

## C

C2	Command and Control
C3	Command, Control and Communications
C3I	Command, Control, Communications and Intelligence
C4	Command, Control, Communications and Computers
CAMS	Core automated maintenance system
CASE	Computer-aided software engineering
CDA	Central design activity
CE	Cost element
CE NO	Cost element number
CES	Cost element structure
CIM	Corporate information management
COBOL	Common business-oriented language
COCOMO	Constructive cost model (Software Estimating Tool)
CONUS	Continental United States
COTS	Commercial-off-the-shelf
CSC	Computer software component
CSCI	Computer software configuration item
CSRD	Communications-computer systems requirements document
CRT	Cathode ray tube
CY	Constant year

## D

DARPA	Defense Advanced Research Project Agency
DBMS	Database management system
DCIS	Defense Commissary Information Service
DD	Department of Defense (used in conjunction with forms, i.e., DD Form)
DDI	Director of Defense Information
DFAS-DE	Defense Finance and Accounting Service-Denver Center
DISA	Defense Information Systems Agency

DISN	Defense Information System Network
DITSO	Defense Information Technology Service Organization
DMR	Defense management report
DMRD	Defense management report decision
DoD	Department of Defense
DODI	Department of Defense Instruction
DODPM	DOD pay manual
DOL	Department of Labor
DPC	Data processing center

## E

EA	Economic analysis
ECO	Engineering change order
EDI	Electronic data interchange
EOFY	End of fiscal year (Often shortened to EOY)
ER	Executive report
E-Mail	Electronic mail

## F

FAR	Federal Acquisition Regulation
FEA	Functional economic analysis
FEAM	FEA model
FEP	Front-end processor
FFS	Fee-for-service
FIM	Functional integration management
FM	Functional manager
FOC	Full operational capability
FOIA	Freedom of Information Act
FPI	Functional process improvement
FY	Fiscal year

**G**

<b>G&amp;A</b>	General and administrative
<b>GA</b>	Galorath Associates
<b>GCC</b>	Graduated combat capability
<b>GMT</b>	Greenwich mean time
<b>GOSIP</b>	Government open systems interconnection profile
<b>GUI</b>	Graphical user interface

**H**

<b>HAF</b>	Headquarters Air Force
<b>HHT</b>	Hand-held terminals
<b>HQ</b>	Headquarters

**I**

<b>IAW</b>	In accordance with
<b>ICAM</b>	Integrated computer-aided manufacturing
<b>I-CASE</b>	Integrated-computer aided software engineering
<b>IDA</b>	Institute for Defense Analysis
<b>IDEF</b>	ICAM definition language
<b>IDEF0</b>	IDEF activity model language
<b>IOC</b>	Initial operating capability
<b>IPB</b>	Illustrated parts breakdown
<b>IRR</b>	Initial requirements review

**J**

<b>JTR</b>	Joint Travel Regulation
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**K**

<b>K</b>	Kilo (thousands)
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**L**

<b>LAN</b>	Local area network
<b>LCC</b>	Life cycle cost

LCCE	Life cycle cost estimate
LOC	Lines of code
LOGMARS	Logistics Application of Automated Marking and Reading Symbols System

## M

M	Mega (millions)
MAIS	Major Automated Information System
MAJCOM	Major command
MILCON	Military construction
MIS	Management Information System
MITLA	Microcircuit technology in logistics applications
MSU	Mass storage unit

## N

NIST	National Institute of Standards and Technology
Non-C2	Non-Command and Control
NPV	Net present value

## O

O&S	Operations and support
OAS	Office automation software
OASD	Office of the Assistant Secretary of Defense
OCONUS	Outside CONUS
OCR	Office of Collateral Responsibility
OMB	Office of Management and Budget
OMR	Optical mark reader
OOA	Object-oriented analysis
OOD	Object-oriented design
OPR	Office of Primary Responsibility
OSD	Office of the Secretary of Defense
OSD (PA&E)	Office of the Secretary of Defense (Program Analysis and Evaluation)
OSE	Open system environments

P

PC	Personal computer
PCS	Permanent change of station
PMO	Program Management Office
POM	Program Objective Memorandum
POSIX	Portable operating system interface for computer environments

Q

QOT&E	Quality, operational, test and evaluation
-------	---

R

RADCF	Risk-adjusted discounted cash flow
RAPID	Reusable Ada products for information systems development
RDT&E	Research, development, test and evaluation
RF	Radio frequency
RFI	Radio frequency interface
ROI	Return on investment
ROM	Rough order of magnitude
RPC	Regional Processing Center
RPM	Real property maintenance

S

SAF	Secretary of the Air Force
SATS	Supply Asset Tracking System
SBLC	Standard base-level computer
SBSS	Standard Base Supply System
SEER	Systems evaluation and estimation of resources
SEER-SEM	SEER-Software Estimating Model
SEI	Software Engineering Institute
SEII	Software engineering and integration infrastructure
SF	Standard form
SMSCRC	Standard multiuser small computer requirements contract
SOW	Statement of work

SPAS	Security Police Automated System
SSG	Standard Systems Group
Std	Standard
STE	System integration and effort
STEIM	Software Technology Economic Impact Model
SWTP	Software technology plan

## T

TCC	Telecommunication Center
TO	Technical order
TR	Test report
TRANSCOM	Transportation Command
TRIM	Training Requirements Information System
TRR	Test readiness review
TY	Then year

## U

USAF	United States Air Force
USAFOMC	USAF Occupational Measurement Center

## V

VANs	Value added networks
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## W

WBS	Work breakdown structure
WCCS	World-Wide Command and Control System
WISP	WANG Interchange Source Processor
WN	Working note

## Z

ZULU	Greenwich mean time
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## **SECTION 1**

### **INTRODUCTION**

#### **1.1 PURPOSE AND SCOPE**

The purpose of this Baseline Process Analysis Report is to identify processes involved in the performance of activities and functions related to the receipt, storage, and issue of materiel within a notional base-level supply materiel storage and distribution activity encompassing the receiving, storage and issue, and pick-up and delivery functions.

This is the first document in a series of studies and analyses that are intended to determine the feasibility of implementing the Supply Asset Tracking System (SATS) Air Force-wide. Other documents to follow under this task order include, a revised process assessment report, which will be conducted subsequent to the prototype system becoming fully operational at Shaw Air Force Base (AFB), SC. Although not included in the current contract scope, Eglin AFB also may be included in the revised process assessment report and final economic analysis (EA). Baseline analysis data were collected at Eglin and included in this document. Therefore, a postimplementation analysis at Eglin AFB could easily be performed at the government's request. Both the baseline and the revised process assessment documents will be incorporated into an EA, which will be used to identify the economic desirability of large-scale implementation. Should the SATS prove economically viable, Synergy will assist the program office in preparing program documents and exhibits necessary to support funding requests for Air Force-wide implementation of the operational system.

#### **1.2 TEAM COMPOSITION**

Conducting the EA involves a team effort between HQ SSG/LGSW, the USAF AIT Program Office, and Synergy, Inc. The team includes:

Mr. Pete Ramirez	Deputy Program Manager	USAF AIT SPO
MSgt Harold Pack	SATS Program Manager	SSG/LGSW
Mr. Lloyd Bateman	Project Manager	Synergy
Mr. Glenn Curenton	Analyst	Synergy

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## **SECTION 2**

### **BACKGROUND**

#### **2.1 GENERAL**

The Headquarters, Standard Systems Group, Supply Systems Division (HQ SSG/LGS) provides automated supply systems support including inventory control and weapon systems support to Air Force retail units worldwide. The cornerstone of this support is the Standard Base Supply System (SBSS). The SBSS currently interfaces with a wide variety of wholesale systems as well as several base-level Automated Data Systems (ADS). HQ SSG/LGS is sponsoring the development and implementation of SATS to introduce radio frequency technology and leverage existing LOGMARS capabilities into improved asset visibility throughout base supply processes that are involved in the movement, storage, and delivery of materiel.

The SBSS is operational at more than 100 main Air Force operating locations and more than 230 satellite locations. At these operating locations there are more than 4,000 recorded users of SBSS procedures and processes. The SBSS provides a wide range of automated support to its customers. However, core SBSS processes are more than 30 years old, and the SBSS in general has undergone numerous changes to increase system functionality and meet rapidly changing USAF and DoD support requirements. The current system does not take advantage of advanced computer technologies, data entry media or state-of-the-art business processes. To remain a responsive, viable system, SBSS processes must take full advantage of available technologies. The present business processes are, to a large extent, paper based and manually intensive. Most exception processing and error correction requires research of paper-based reports and listings, and subsequent reprocessing of the corrected information by keystroke entry to the SBSS. Current problems include: (1) wasted paper output, (2) lack of automated research tools, (3) nonintegration of data systems, (integration of data systems is expected to reduce/eliminate the information float) and (4) the keystroking of data from one automated system to another. In concert with the SBSS, SATS will provide significantly increased asset visibility. In addition, significant benefits/savings are anticipated through the reduction of many labor-intensive steps currently performed in processing supply transactions to receive, store, and issue materiel. Such steps include the initiation, completion, and resolution of numerous research actions (i.e., reject processing) and information portrayal/queries. Other anticipated benefits include the elimination of traditional printed documentation required to accompany materiel as it moves through the base-level logistics pipeline, and the storage/archival of the signed documentation required to comply with federal regulations.

## PRIOR EFFORTS

The Air Force began implementation of the Logistics Application of Automated Marking and Reading Symbols System (LOGMARS) in August 1984. Initial implementation within the SBSS included bench stock, warehouse inventory, and warehouse validation processes. Hand-held terminals and scanners were purchased in 1985 for worldwide use in SBSS accounts, to include all Air Force Reserve and Air National Guard units. Beginning in January of 1991, because of technological advancements and economic reasons, existing LOGMARS equipment was replaced with newer, more durable, lightweight equipment. However, the processes associated with the movement of materiel and supporting paperwork within the base supply organization and customer network (receipt, storage, and issue processes) remain primarily manual.

In May 1992, HQ USAF/LGS funded a study entitled *USAF Paperless Supply Concept*, which recommended that receipt processing be updated to use modern technology, incorporating both radio frequency (RF) hand-held terminals and an interface to the SBSS for expedited processing of related transactions and the reduction/elimination of paper documentation currently required to accompany materiel movement. In July 1992, a LOGMARS Application Plan was submitted for review and approval as an initiative under the DoD LOGMARS Program to HQ AFMC/LGTX (LOGMARS PMO). The LOGMARS Application Plan specifically stated that RF was to be one of the components used for implementing a paperless supply. The areas targeted for RF implementation were the receiving, storage and issue, and pickup and delivery sections. The Standard Systems Group's Supply Systems Modernization Branch (HQ SSG/LGSW) is responsible for planning and implementing a standard process for using bar-code technology within the SBSS.

## SECTION 3

### GROUND RULES AND ASSUMPTIONS

The following is a description of the ground rules and assumptions under which the studies and analyses supporting the SATS will be conducted. While most of these pertain primarily to the EA to be performed after implementation of the prototype system, they remain important considerations in understanding the methodology behind the overall analytical effort.

#### **3.1 GENERAL**

- The SATS EA will be structured in accordance with (IAW) the guidance contained in the OASD (PA&E) Guidance on Cost Benefit Analysis
- Base year will be FY96. All capturable costs incurred before this period will be considered as a single lump-sum prior year cost
- Cost estimate will extend 10 years
- Funding will be in 3080, 3400, 3500, and 3600 appropriations
- No classified information will be processed on the revised system
- The first installation will achieve initial operating capability (IOC) in FY97 with IOC for all locations by FY00
- The cost of installation at publicly announced base closure sites will not be considered in this study
- There will be no research, development, test and evaluation (RDT&E) phase for the cost estimate. All costs will be classified as either investment or operations and support
- Ten percent midyear DoD discount factors will be used to discount future costs per AFR 173-15 or its successor document
- The most current OSD inflation indices will be used to calculate base (or then) year dollars
- Demographics will be averaged across years. (i.e., # in FY[1] + # in FY[2]) / 2 = Avg. # in FY[2])

- Base operating support (BOS) cost is estimated at 12 percent of direct staffing costs per year (per SSG/FMC)
- For estimating purposes, commercial off-the-shelf (COTS) hardware and software costs for procurement and associated maintenance are extracted from existing DoD contracts
- Information gained through studies of two bases, Shaw AFB, SC, and Eglin AFB, FL, will be used to arrive at a notional supply function. All costs and savings identified will be derived from this notional entity

### **3.2 STAFFING**

- Previously identified staffing reductions continue as programmed.
- Maintenance and modernization staff reductions identified in FEAs or other external studies and analyses will be reflected in the cost estimate to the extent that information is available for timely inclusion in the analysis.
- Staffing costs for military and government civilian employees will be based on standard rates provided in AFR 173-15 or its successor documents. Rates for contract employees will be developed based on available contract data.

### **3.3 HARDWARE**

- All equipment will be purchased day one and not leased
- Workstation economic life cycle is 5 years
- Mainframe economic life cycle is 10 years
- Residual/terminal value of equipment will not be considered in this study
- Government-furnished equipment (GFE) costs are included in this cost estimate
- Upon the expiration of a current hardware contract, another hardware platform of equal or greater capability will be available from replacement DoD contracts. This replacement hardware will be equal to or less expensive and capable of running software applications with minimal software modifications

- Workstation and file server replacement and maintenance cost accrual will begin immediately following the applicable warranty period, and will be phased over the economic life of the hardware
- The hardware will have a warranty period that begins at the ready for use date at each installation IAW the applicable contract
- Commercial warranties are included in the procurement cost of the COTS hardware
- Diagnostic software will be provided by the hardware vendors as part of the hardware purchase
- Hardware documentation will be provided by the hardware vendors as part of the hardware purchase price
- Hardware configuration will remain consistent at all continental U.S. (CONUS) and outside CONUS (OCONUS) locations
- Current dumb terminal replacement will be required to comply with system requirements

### **3.4 SOFTWARE**

- Economic life of software is 20 years.
- Modernized software will operate in an open system environment.
- The regional platform will have an open systems environment (OSE) available by FY96 and will operate in only the OSE no later than FY97.
- The size and cost of the modernized system software will be extracted from the applicable development contract(s). If such information is not available in time for inclusion in this study, software development will be developed using estimated lines of code, function point analysis, and software estimating tools (e.g., REVIC).
- Modernizing subsystems will be responsible for ensuring interfaces are maintained with nonmodernizing systems.
- Site-specific (custom) software development or procurement is not included in this program.
- MAJCOM-unique application software migration is the responsibility of the MAJCOM.

### **3.5 MAINTENANCE**

- CONUS and OCONUS hardware and operating system software will be contractor maintained.
- COTS software and purchased hardware will be maintained IAW applicable procurement contract maintenance provisions.
- Existing DoD communications network will be used to the maximum extent possible. (e.g., DDN, DISN)

### **3.6 MILITARY CONSTRUCTION REAL PROPERTY MAINTENANCE**

- Major or minor construction is not required for this effort.
- Facility modifications are not required.

**SECTION 4.**  
**SATS DEVELOPMENT AND IMPLEMENTATION SCHEDULE**

The following table contains the current schedule for the development and implementation of the SATS system.

*Table 4-1. SATS Schedule*

EVENT	DATE
File servers in place	1 Jul 96
Software Test Plan — Final	31 Jul 96
Unit Testing at LOGICON/SYSCON	5 Aug 96
Integrated Testing — LOGICON/SYSCON & SBSS	19 Aug 96
System User Manual — Final	26 Aug 96
System Installation Plan — Final	26 Aug 96
Return Users to LOGICON/SYSCON — final review	16 Sep 96
Training & Implementation — Shaw AFB SC	30 Sep 96
Activation at Shaw AFB, SC	28 Oct 96
Training & Implementation — Eglin AFB, FL	25 Nov 96
Activation at Eglin AFB, FL	23 Dec 96

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## SECTION 5

### METHODOLOGY

Between August 1995 and January 1996, Synergy analysts visited Shaw AFB, SC, and Eglin AFB, FL. At both locations, analysts worked side-by-side with personnel in the receiving, storage and issue, and pick-up and delivery sections observing and documenting the processes required to perform the functions of the respective sections. Processes to be included in this analysis were identified in advance with HQ SSG/LGSW and Shaw AFB supply personnel. The processes charted included:

- Receipts
- Turn-ins
- Issues
- Due-out releases
- Notices to stock
- Shipments

Metrics were gathered and analyzed using a process flow/time-motion methodology to arrive at an average level-of-effort required to conduct each process. Level-of-effort captured included the time required to perform research, process corrected information, physical movement of materiel and coordination with ancillary functional areas (i.e., MICAP, stock control). For incoming materiel, asset movement was charted from receipt at the base supply receiving dock until materiel was either signed for by the requestor (DOR) or placed in the warehouse bin location (notice to stock). Issues, turn-ins, shipments, warehouse refusals, as well as transaction-unique processes (e.g., MICAP vs. routine DOR/ISU, notice to stock with/without warehouse location assigned, etc.) were charted as well.

Fifty to three hundred (50-300) samples were taken of each process (depending upon the number of process occurrences during the analysis) to ensure a statistically significant population was sampled upon which to base future decisions concerning benefits to be derived from SATS implementation. The raw statistical data collected in this baseline effort are contained in Appendix A. A review of SBSS management products such as the M32 Base Supply Management Report, Consolidated Transaction History, and Daily Reject Listings was

accomplished to sample selected transaction volumes. Following the implementation of SATS, the processes will again be analyzed in a like manner to determine the level of process improvement.

Section 6 contains the results of the process definition and level-of-effort capture.

## SECTION 6

### DESCRIPTION OF CURRENT BUSINESS FUNCTIONS

Currently, the majority of Air Force bases have little operational LOGMARS capability/equipment in place except for locally developed and implemented self-help initiatives. Procedures exist for both manual and LOGMARS-related receipt systems, however, full implementation and standardization of LOGMARS has not been mandated. Both conventional SBSS and LOGMARS procedures involve the use of inquiry receipt screens summarized below. LOGMARS can provide a proven, efficient alternative to the conventional system receipt transaction input media. However, current procedures include several manual processing steps, e.g., extensive verification, trips to and from processing terminals to enter and research/verify/correct data, as well as marrying of property and documentation.

(1) Inquiry Receipt Screens (IRS). When available, IRSs make it possible to use a different and more simple receipt process than is possible with receipt due-in inputs. If IRSs are not available or not utilized, a document number inquiry or receipt due-in input must be accomplished. These are time consuming tasks and increase the chances of mis-keyed transactions and/or receipt not due-in rejects. If adequately equipped, LOGMARS can be used with any supply document that contains the bar coded symbols. For example, a single read of the document number on the IRS will activate the processing procedure.

#### **6.1 RECEIVING ELEMENT**

##### **6.1.1 Responsibilities**

The following represents a partial list of the responsibilities of the Base Supply Receiving Element. This description is not all-inclusive, but rather is intended to describe those activities that may be reasonably expected to benefit from the implementation of RF technology (SATS).

- *Receipt Processing*. Ensure that receipts are processed for 1) all property marked for the local FB/FE stock record account and 2) all property NOT marked for other stock record accounts (such as FT, FC, or FP). This includes the turn-in of materiel from base organizations.
- *Temporary Receipt Storage*. Establish clearly marked hold bays or tote boxes to store priority 01-08 property receipts and materiel until they are processed.
- *Due-In List*. Maintain a list of all due-ins in requisition number sequence.

- *Control Procedures.* Establish controls to be certain all deliveries to using organizations are documented properly. Any time a satellite organization bypasses the support Base Receiving Element to secure materiel, it must submit signed copies of the receiving documents to the supporting Base Supply.

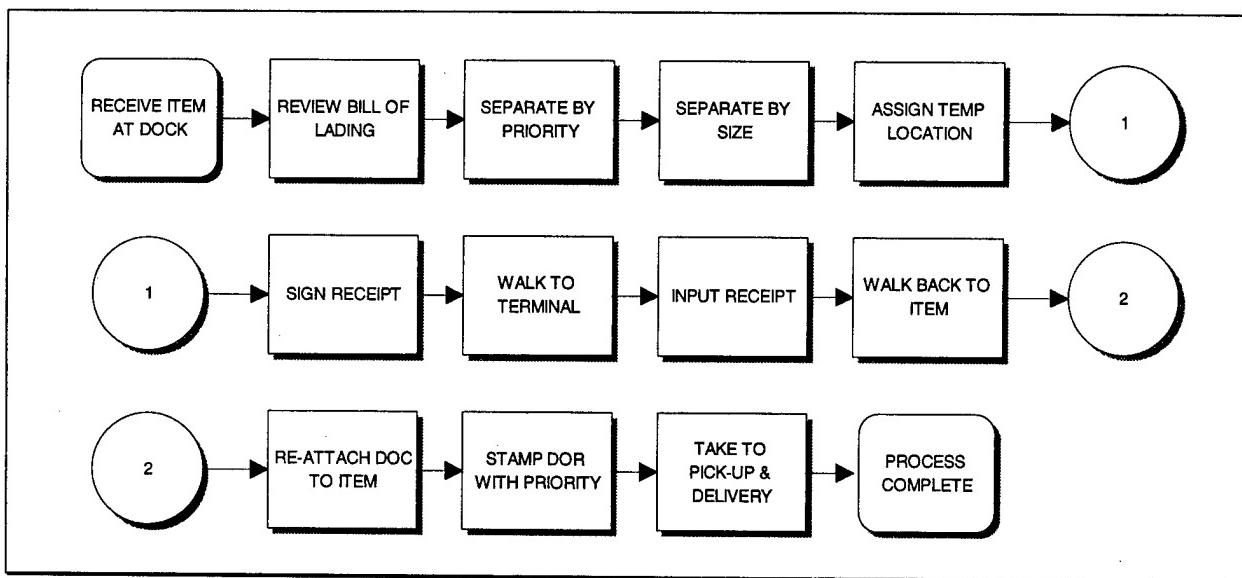
### 6.1.2      Procedures

The following is a general overview of the process for receiving materiel under the current system (Figures 6-1 through 6-6 provide a more detailed graphical representation of the receiving process):

- In-checker removes accompanying documentation from property and verifies data elements. If all entries are correct, annotates property location, signs and dates document.
- Depending on the source, type of item, and condition of property, the inspection branch may have to inspect the property (some items require 100% inspection, e.g., shelf-life and hazardous material)
- Forwards documentation to the input terminal for receipt processing.
  - Call the IRS on the terminal using the keyboard.
  - Read or key the document number and transmit. The input document number is used by the inquiry program (GV273) to call the applicable due-in-detail from the file. If found, data from the due-in detail appear on screen. If not found, a reject is generated.
  - Key in the stock number of the receiving document in the appropriate data field.
  - Check the screen to be sure the data that appear match the data on the receipt document.
  - Adjust any fields as required using manual key-ins.
  - Depress the XMIT key. The screened data will be formatted in-line into the proper receipt input and internally processed by application routines.
  - Use the displayed screen to process another receipt document. (The last screen requested will reappear after output messages are generated).

- A due-out release document, notice to stock or reject notice is printed and returned to the receiving line to be married with the property. Another verification is made at this point.
- Property and documentation are forwarded for delivery, storage, or temporary location pending reject clear (reprocessing input).

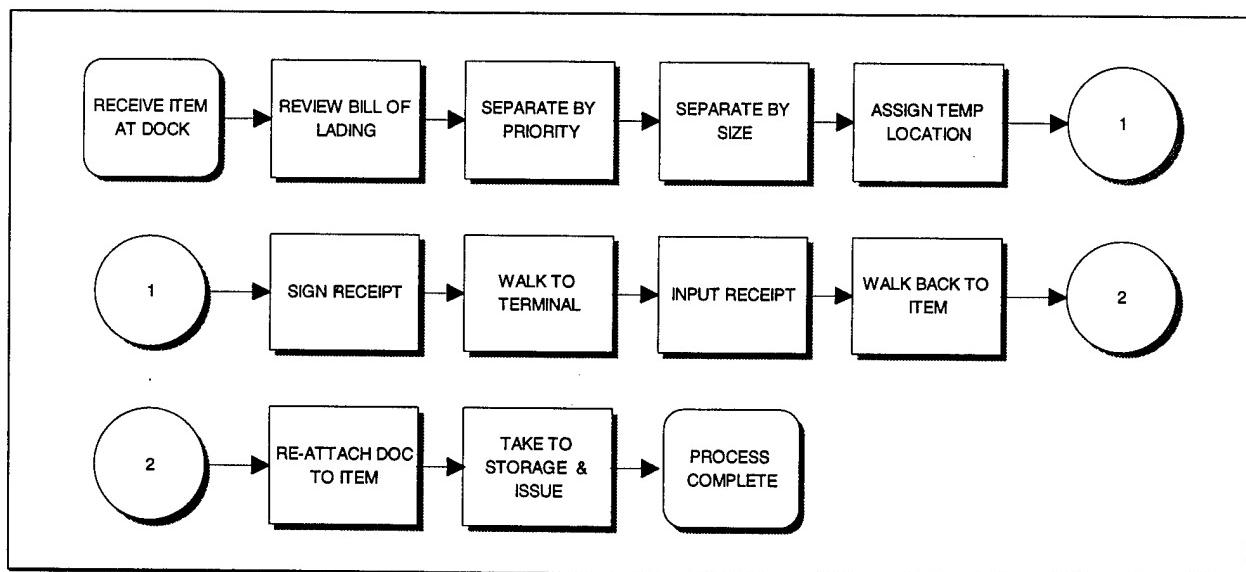
The following pages provide a graphical representation of the processes sampled within the receiving element. Raw statistical data summarized in the composite data descriptive analysis tables for each process are contained in Appendix A.



*Figure 6-1. Routine Receipt with Due-Out Release*

*Table 6-1. Routine Due-Out Release Composite Data Descriptive Analysis*

Receipt With DOR Composite Data	
Mean	288.53
Standard Error	1.64
Median	288.66
Standard Deviation	28.47
Sample Variance	810.79
Kurtosis	-1.04
Skewness	0.05
Range	118.98
Minimum	234.55
Maximum	353.53
Sum	86560.10
Count	300.00
Largest(1)	353.53
Smallest(1)	234.55
Confidence Level(95.000%)	3.22



*Figure 6-2. Routine Receipt with Notice to Stock*

Table 6-2. Receipt with Notice to Stock Composite Data Descriptive Analysis.

Receipt with Notice To Stock Composite Data	
Mean	265.52
Standard Error	1.63
Median	263.80
Standard Deviation	28.28
Sample Variance	799.89
Kurtosis	-1.05
Skewness	0.03
Range	123.30
Minimum	203.00
Maximum	326.29
Sum	79655.17
Count	300.00
Largest(1)	326.29
Smallest(1)	203.00
Confidence Level(95.000%)	3.20

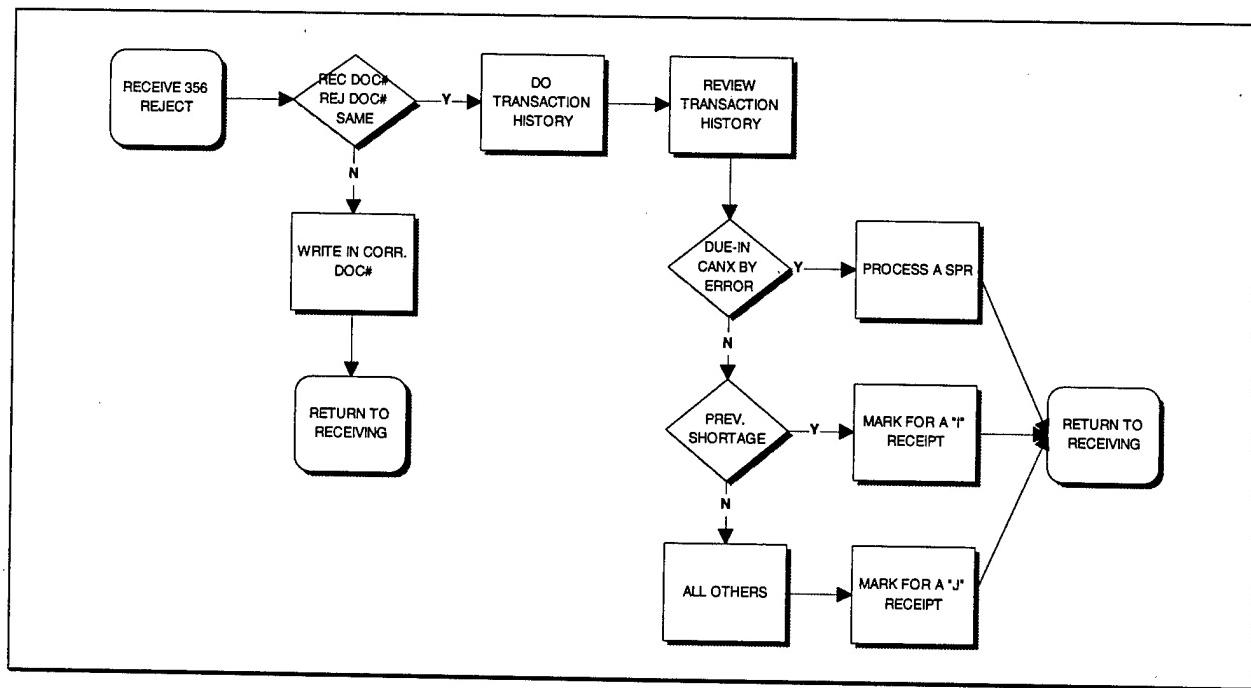
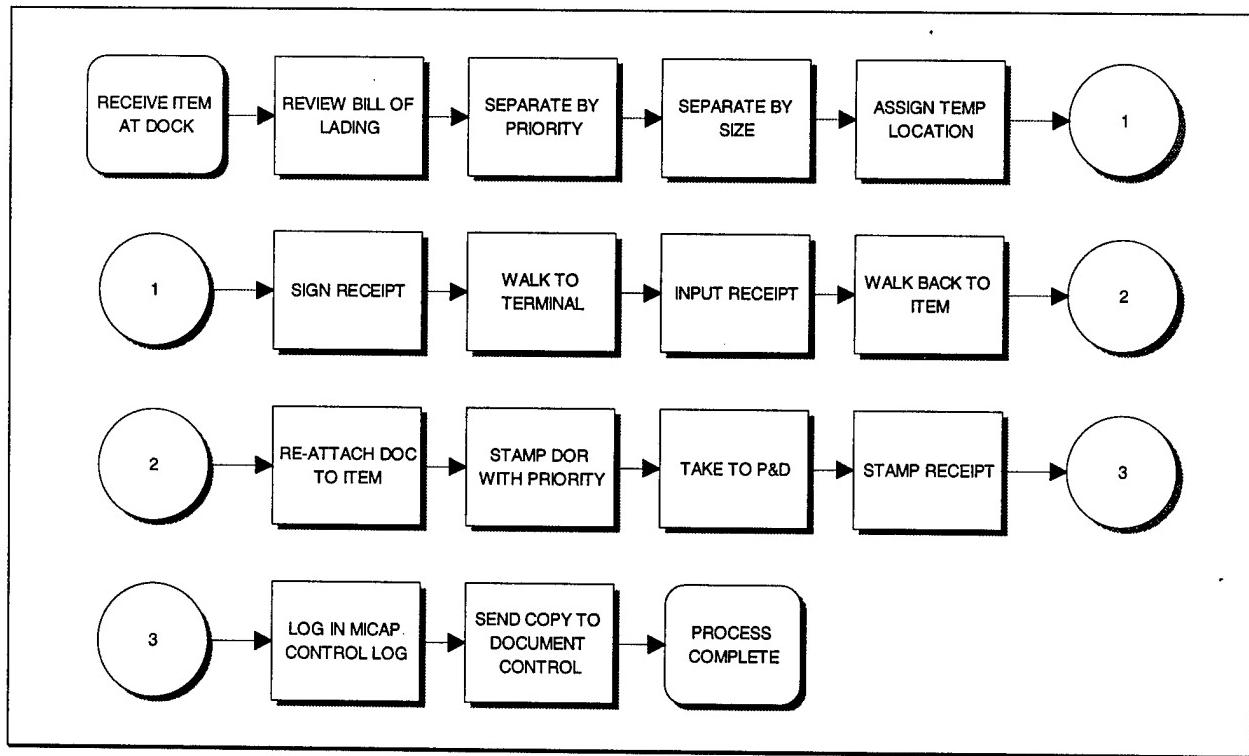


Figure 6-3. Receipt not Due-In Process

*Table 6-3. Receipt not Due-In Composite Data Descriptive Analysis*

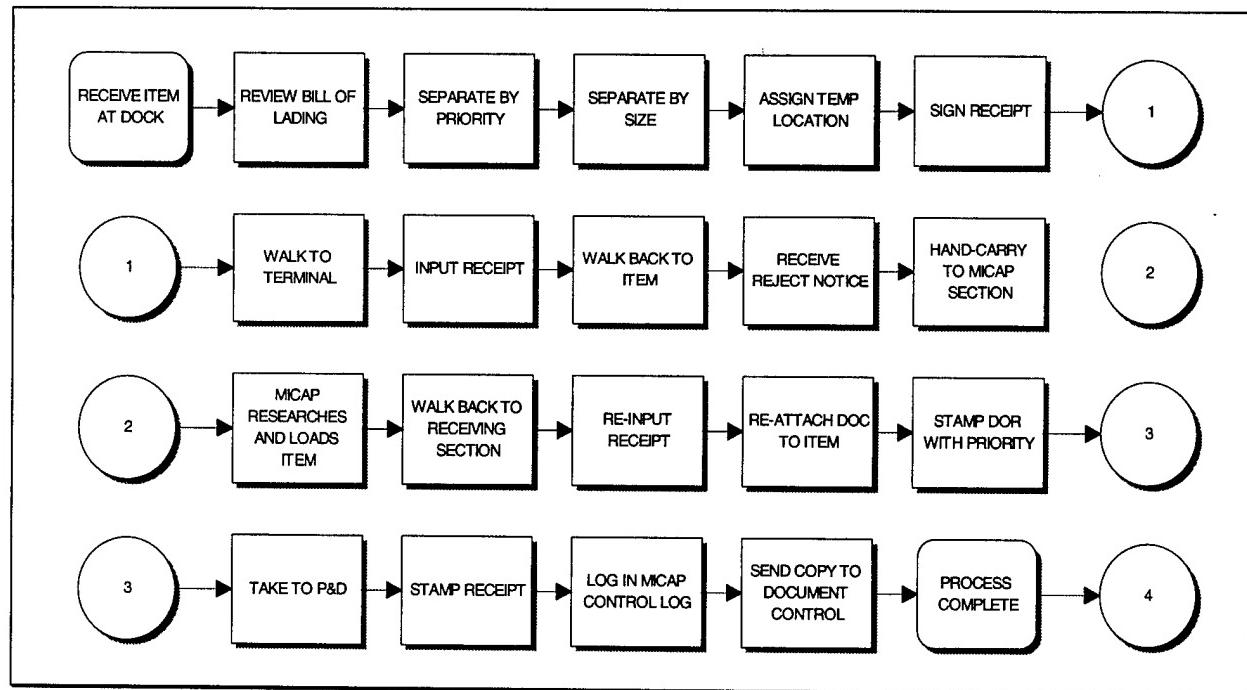
Receipt Not Due-In Composite Data	
Mean	620.8844
Standard Error	8.016696
Median	626.7868
Standard Deviation	59.45341
Sample Variance	3534.708
Kurtosis	-0.93807
Skewness	-0.09905
Range	232.8317
Minimum	502.6665
Maximum	735.4982
Sum	34148.64
Count	55
Largest(1)	735.4982
Smallest(1)	502.6665
Confidence Level(95.000%)	15.71241



*Figure 6-4. MICAP Receipt Processing*

*Table 6-4. MICAP Receipt not Loaded Composite Data Descriptive Analysis*

MICAP receipt Processing Composite Data	
Mean	353.20
Standard Error	4.34
Median	353.49
Standard Deviation	28.60
Sample Variance	817.78
Kurtosis	-1.04
Skewness	0.05
Range	126.68
Minimum	293.63
Maximum	420.31
Sum	105961.15
Count	300.00
Largest(1)	420.31
Smallest(1)	293.63
Confidence Level(95.000%)	3.24



*Figure 6-5. MICAP Receipt Not Loaded*

Table 6-5. MICAP Receipt Not Loaded Composite Data Descriptive Analysis

MICAP Receipt Not Loaded Composite Data	
Mean	571.64
Standard Error	4.34
Median	577.13
Standard Deviation	33.09
Sample Variance	1094.71
Kurtosis	-0.82
Skewness	0.07
Range	126.17
Minimum	514.85
Maximum	641.01
Sum	33154.88
Count	58.00
Largest(1)	641.01
Smallest(1)	514.85
Confidence Level(95.000%)	8.51

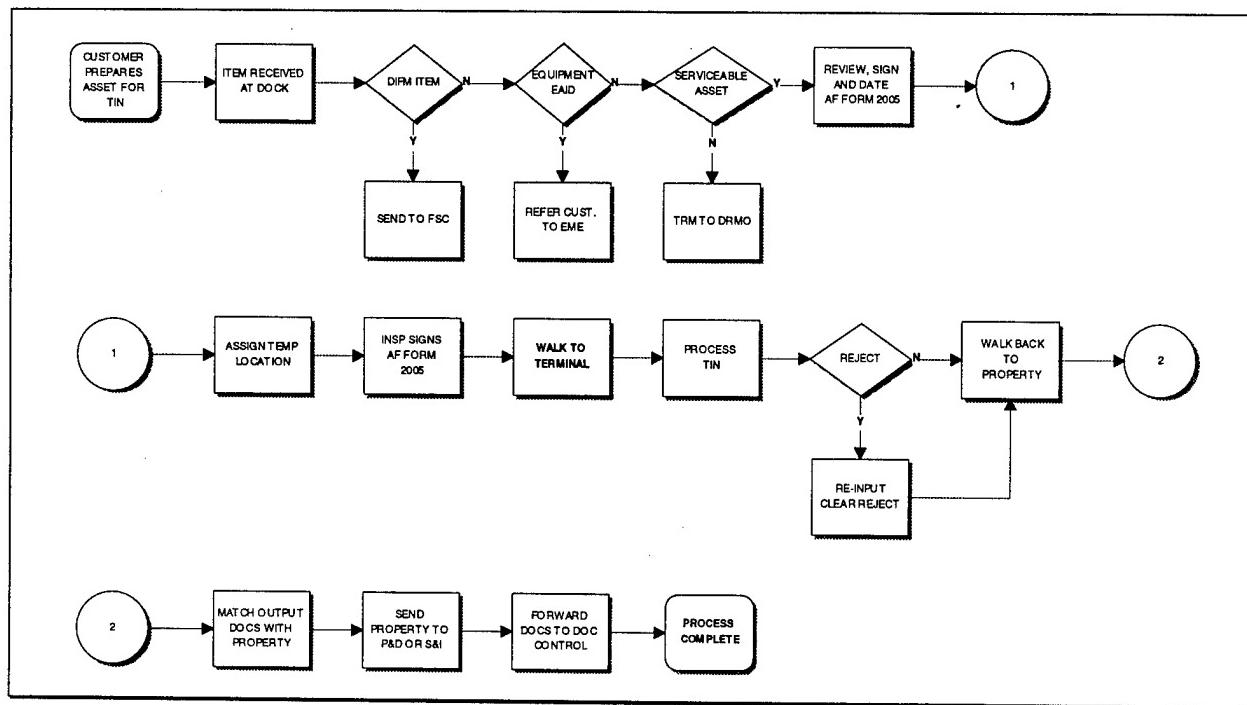


Figure 6-6. Serviceable Turn-In Procedure

*Table 6-6. Serviceable Turn-In Composite Data Descriptive Analysis.*

Serviceable Turn-In Composit Time	
Mean	184.79
Standard Error	1.67
Median	185.18
Standard Deviation	10.26
Sample Variance	105.37
Kurtosis	-0.16
Skewness	-0.53
Range	39.44
Minimum	163.38
Maximum	202.82
Sum	7022.13
Count	38.00
Largest(1)	202.82
Smallest(1)	163.38
Confidence Level(95.000%)	3.26

## **6.2           STORAGE AND ISSUE SECTION**

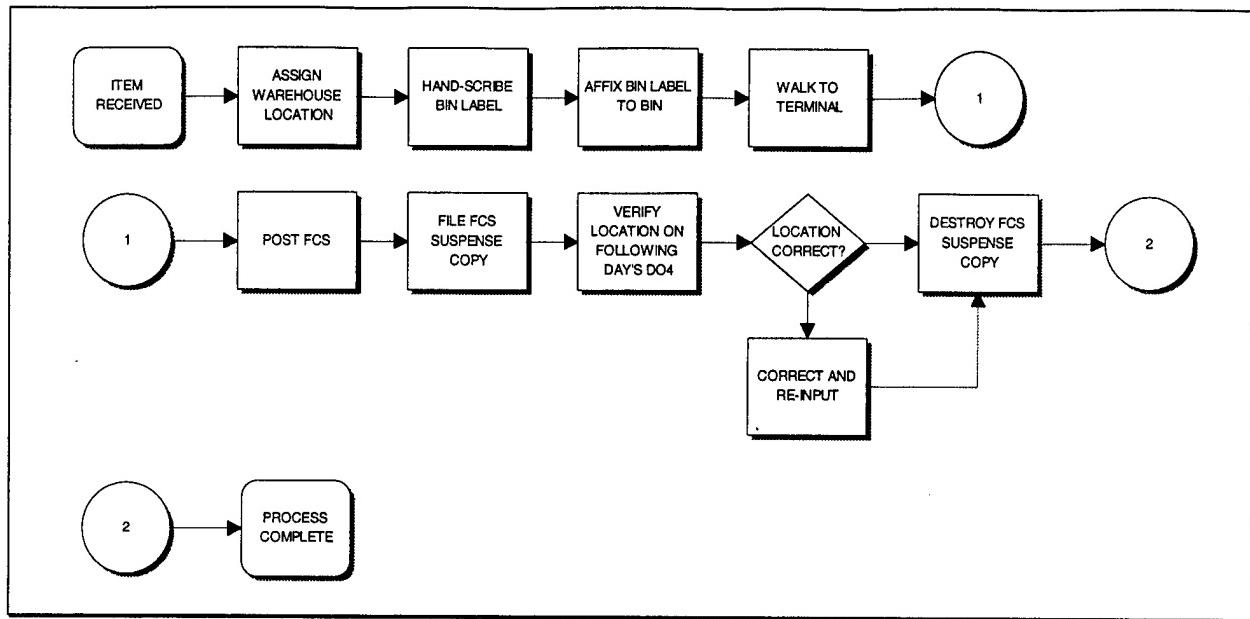
Issue processing is a basic Supply process. Most commonly, when activities require supplies and equipment, they submit an issue request to a Demand Processing (DP) function. Most of these requests for supplies are submitted on AF Form 2005 and for equipment on AF Form 2005 or AF Form 601. In addition, storage and issue performs another basic supply function — binning/placing stocks in warehouse locations for future issue to customers.

### **6.2.1       Procedures**

After a request for issue is processed and property is available, the SBSS computer prints a DD Form 1348-1 or DD Form 1348-1A issue document on the applicable warehouse terminal or on the RPS/main system for items that are to be issued to an established account customer. Similarly, the SBSS computer prints a DD Form 1348-1 or DD Form 1348-1A shipping document on the applicable warehouse terminal or on the RPS/main system for items that are to be shipped to another accountable organization/entity outside of the SBSS account. Typical issues and shipments include the following steps:

- The 1348-1 or 1A is received in the S&I Element.
- The document is stamped with the proper priority.
- Item is located and NSN and location are verified with the document.
- A signature is entered in block 22 of the document, and the date in block 23 of the document by the individual pulling the property.
- Item is removed from stock and forwarded to P&D for delivery to the customer (issues) or the base transportation activity (shipments).
  - If issue is a MICAP item, item is recorded in the MICAP log in P&D.

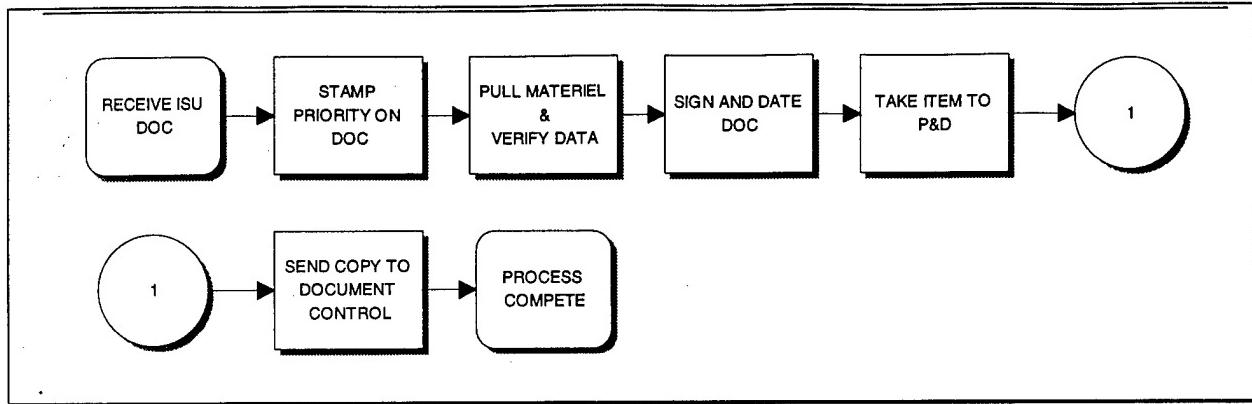
The following pages (Figures 6-7 through 6-10) provide a graphical representation of the processes sampled within the storage and issue section. Raw statistical data summarized in the composite data descriptive analysis tables for each process are contained in Appendix A.



*Figure 6-7. Notice to Stock — No Warehouse Location*

*Table 6-7. Notice To Stock — No Warehouse Location Composite Data Descriptive Analysis*

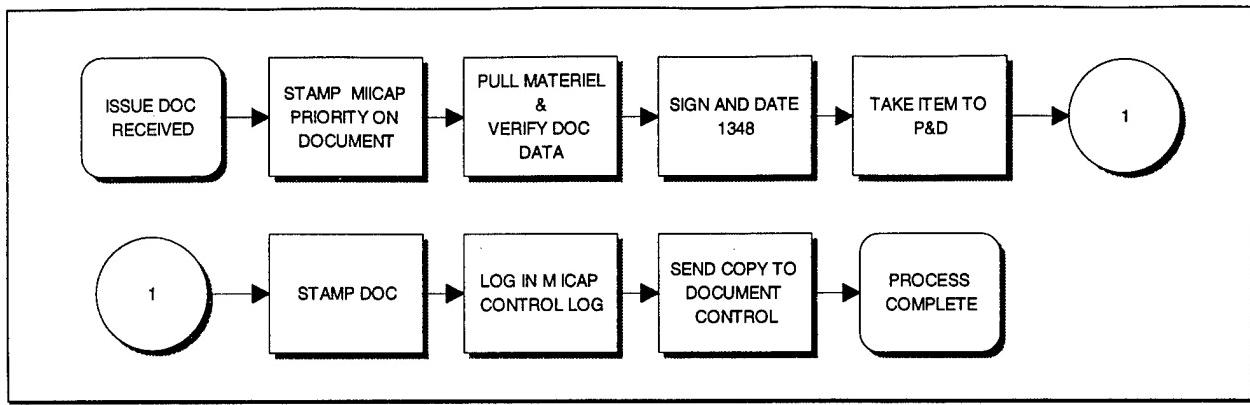
Notice To Stock No Warehouse Location Composite Data	
Mean	260.75
Standard Error	1.92
Median	262.58
Standard Deviation	13.74
Sample Variance	188.73
Kurtosis	-0.47
Skewness	-0.43
Range	57.91
Minimum	225.40
Maximum	283.31
Sum	13298.15
Count	51.00
Largest(1)	283.31
Smallest(1)	225.40
Confidence Level(95.000%)	3.77



*Figure 6-8. Routine Issue Process*

*Table 6-8. Routine Issue Composite Data Descriptive Analysis*

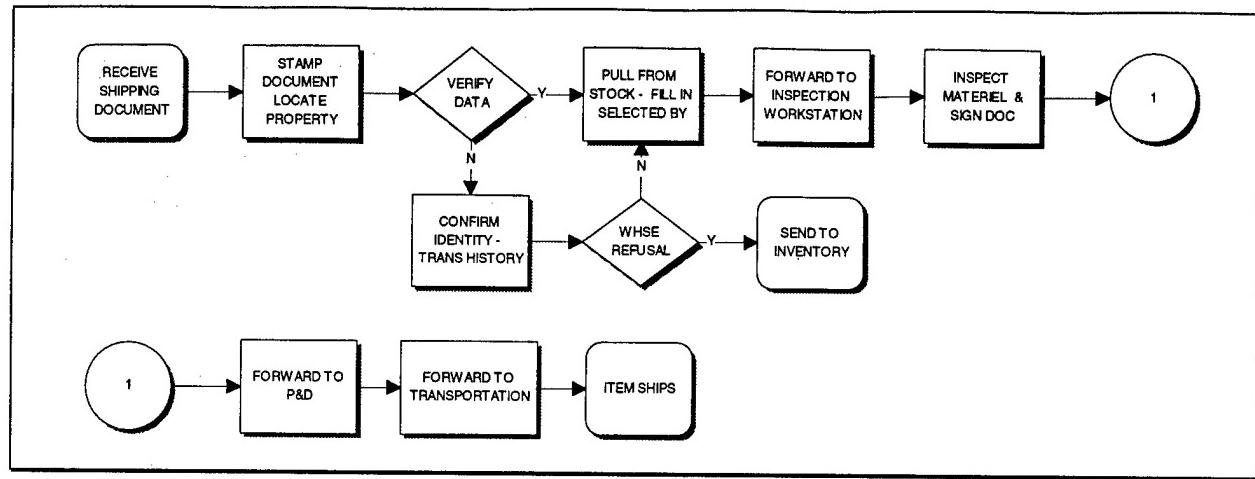
Routine Issue Transaction Composite Data	
Mean	90.11
Standard Error	0.37
Median	90.09
Standard Deviation	6.34
Sample Variance	40.24
Kurtosis	-0.75
Skewness	-0.07
Range	30.31
Minimum	74.31
Maximum	104.62
Sum	27032.23
Count	300.00
Largest(1)	104.62
Smallest(1)	74.31
Confidence Level(95.000%)	0.72



*Figure 6-9. MICAP Issue Process*

*Table 6-9. MICAP Issue Composite Data Descriptive Analysis*

MICAP Issue Composite Data	
Mean	111.75
Standard Error	0.44
Median	111.99
Standard Deviation	6.46
Sample Variance	41.68
Kurtosis	-0.63
Skewness	-0.08
Range	32.77
Minimum	95.36
Maximum	128.13
Sum	24249.83
Count	217.00
Largest (1)	128.13
Smallest (1)	95.36
Confidence Level (95.000%)	0.86



*Figure 6-10. Routine Shipment Process.*

*Table 6-10. Shipment Transaction Composite Data Descriptive Analysis*

Shipment Transaction Composite Data	
Mean	157.03
Standard Error	2.40
Median	156.26
Standard Deviation	15.90
Sample Variance	252.72
Kurtosis	0.20
Skewness	0.61
Range	67.83
Minimum	126.55
Maximum	194.38
Sum	6909.53
Count	44.00
Largest (1)	194.38
Smallest (1)	126.55
Confidence Level (95.000%)	4.70

## **6.3 PICKUP AND DELIVERY ELEMENT**

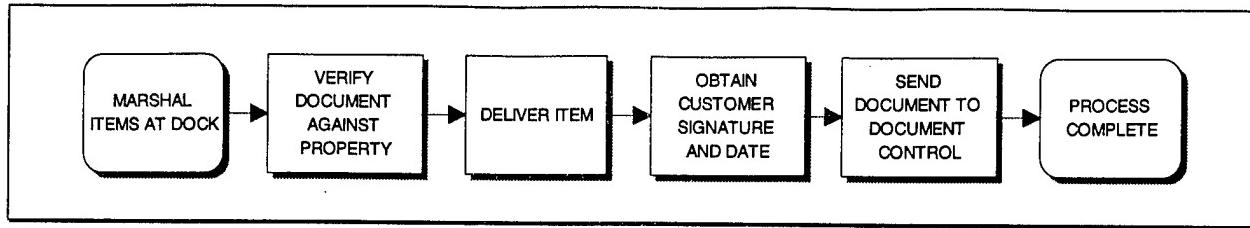
The pick-up and delivery (P&D) element is responsible for the physical distribution of materiel to the designated recipient, and ensuring copies of signed documentation are forwarded to the appropriate function for transaction closure. This includes picking up materiel for turn-in/shipment from supported organizations as well as delivery of materiel to the organization.

### **6.3.1 Procedures**

Upon receiving an item for delivery, the following actions are taken:

- Marshals/sorts the items to be delivered in a holding area within the P&D section.
- Checks the item against the document.
- Obtains proper materiel handling equipment and transport vehicle.
- Loads the items on the delivery vehicle.
- Delivers the property to the activity.
- Writes the model, serial number, and manufacturer's name on the document, along with any other data that may be required locally if the item is under warranty or guaranty (an office machine, appliance, weapon, or an item on which Contract Maintenance requires serialized control).
- Verifies recipient is authorized to sign for the materiel. Obtains printed name and signature, date and time delivered in the appropriate block.
- Forwards copy of documents to Document Control as required.
- Sends the documents and materiel directly to the base transportation activity if the issue is to an off-base organization.

The following page provides a graphical representation of the process sampled within the Pick-Up and Delivery Section (Figure 6-11). Raw statistical data summarized in the composite data descriptive analysis table for the process is contained in Appendix A.



*Figure 6-11. Item Delivery Process*

*Table 6-11. Item Delivery Process Composite Data Descriptive Analysis*

Item Delivery Composite Time	
Mean	192.35
Standard Error	3.65
Median	189.82
Standard Deviation	63.14
Sample Variance	3986.58
Kurtosis	-1.07
Skewness	-0.02
Range	237.94
Minimum	69.06
Maximum	307.00
Sum	57705.96
Count	300.00
Largest (1)	307.00
Smallest (1)	69.06
Confidence Level (95.000%)	7.14

## SECTION 7

### POTENTIAL AREAS FOR IMPROVEMENT

Actual benefits derived from SATS implementation will depend upon the complete range of functionality incorporated in the system as implemented at Shaw AFB, SC, and will be documented in the EA developed at the conclusion of this task. The following paragraphs highlight areas where significant process improvements are anticipated based upon the analysis performed at Shaw AFB and Eglin AFB as well as the scope of SATS functionality available at the time of the baseline analysis.

#### **7.1 RECEIVING**

Most base supply receiving sections use some LOGMARS capability. Significant potential for higher efficiency exists through leveraging existing LOGMARS capabilities combined with implementation RF technology and some equipment modernization. The general applicability of LOGMARS technology and implementation requirements would remain the same. Definitive savings in personnel staffing and time are possible with the process improvements resulting from the combined SBSS/LOGMARS/SATS capabilities. The following paragraphs describe a scenario in which RF technology (SATS) could be used to improve the processes sampled in the receiving section.

##### **7.1.1 Receipt Process**

The current SBSS inquiry receipt screens could be used with little modification. RF hand-held terminals (HHTs) currently available on the market are capable of displaying the receipt due-in screens (display 8x40 minimum). The primary objective is to have a direct interface between the host computer and the SATS/RF server to access/display receipt due-in file data. HHTs could use the existing LOGMARS screens. Materiel incheckers could do so with real-time updates and outputs. There would be no need to write on documents, return them to a receiving terminal, and have someone process them. Rejects, quantity adjustments, etc., would be handled by the inchecker without movement. An estimated fifteen SBSS screens may require modification to allow the HHT to accept, display and process information under this scenario. Output generated by processing the receipt input screens would be routed to a bar-code printer. Multiple printers would be used throughout the receiving and storage and issue sections, some portables actually worn by personnel performing the processing. The printer nearest the RF HHT transmitting the receipt input would generate a bar-coded stick-on label to be attached to the property with the minimum information needed for proper movement/disposition of property. The identity of the

person processing the transaction would be added to the transaction history record on the host computer. The identity code would be established upon signing on the HHT.

#### **7.1.2            Issue Process**

LOGMARS procedures have not been incorporated into the Supply issue process. For LOGMARS to be used effectively in the Supply issue process, current procedures and software should be updated. In concert with LOGMARS, SATS may provide the opportunity to modernize the issue process. Elimination of printed documents for the majority of issue transactions (except for special conditions such as classified materiel), and file maintenance of signed documents could be realized. SATS/RF servers could host a data base to keep track of transactions coming from the SBSS as well as tracking property throughout the retrieval and delivery cycle. Personal identifier numbers (PINs) would be used to log on all HHTs. These PINs, along with the date and time stamp, would become a permanent part of the audit trail to show the flow of property and provide analytical capability to branch chiefs, procedures, and Chief of Supply.

### **7.2            STORAGE AND ISSUE SECTION**

Using SATS/RF servers to track and route transactions to warehouse personnel based upon warehouse location would eliminate the requirement to continually monitor output printers. In addition, printed output could be selectively generated, i.e., off-base issues/shipments and items requiring exception management such as CLASSIFIED or HEALTH HAZARD materials. Potentially, even then the number of copies may be reduced and/or eventually eliminated through coordinated Supply/Transportation effort. Generic issues to regular supply customers would require only a bar-coded label with the transaction date and serial number, stock number, document number, and quantity for tracking purposes. For those transactions that require an output document, i.e., CLASSIFIED, HEALTH HAZARD issues, the server would route output to the warehouse printer located nearest the HHT acknowledging acceptance for pulling the property. The SATS/RF Server would keep track of transaction acknowledgments and provide management information on demand such as a list of transactions that have not been pulled.

### **7.3            PICKUP AND DELIVERY SECTION**

Exception type transactions such as off-base issues and handling of CLASSIFIED or HEALTH HAZARD materials that have an output document attached to property will have the transaction date and serial number bar-coded. The bar-coded document should match the bar-coded label attached to the property. The output document may be used to record warranty or guaranty information. The SATS/RF server will identify items that require accountable individuals, i.e., equipment, classified, health hazard, to sign for property. The name,

organization, and phone number of personnel authorized to sign for property will be stored on the HHT until the property is delivered and the completed transaction is routed to the RF server located in pickup and delivery. Responsibility for property transfers to the pickup and delivery section upon scanning the bar-code label on the property. This will update the server with the date and time stamp of property transfer between the warehouse and pickup and delivery. When out of range, the RF HHT will update the RF server as soon as it returns within transmission range. All transactions that occur during the time the RF server is out of range or down will be stored within the HHT until the driver is in range or can return to manually download it to the RF server in case of LAN failure.

#### **7.4 TRANSACTION VALIDATION**

The SATS/RF server will be available and accessed by the document control section. As transactions are generated by materiel movement (scanned) through receiving, warehouse, or pickup and delivery sections, current asset location visibility is maintained. At the final base destination (customer/transportion/warehouse location) suspense files are updated as RF transaction signals generated at time of receipt, or, HHT downloading upon return to base supply, are routed to document control. SBSS database updates occur at end of day. Programs track delinquent transactions and provide a printout to the document control clerk on a daily basis/on demand.

#### **7.5 INVENTORY VALIDATION**

The possibility of using MITLA technology for inventory control purposes may be feasible in the future when the cost of the MITLA tags is significantly reduced. Current LOGMARS II technology for inventory operations is adequate, though potentially labor intensive, when used in SBSS operations.

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## APPENDIX A

### RAW DATA

#### A.1      **ROUTINE RECEIPT WITH DUE-OUT RELEASE.**

The following pages contain the raw data collected during the process flow/time and motion effort for the routine receipt with due-out release process. The process flow is depicted in Section 6, Figure 6-1. A composite of the raw data collected for the process is provided in Section 6, Table 6-1. Raw data displayed represent actual times captured (in seconds) for each observed occurrence of the process (rows) and correlate to individual process steps (columns) as follows:

<u>Column</u>	<u>Process Step</u>
A	Review bill of lading/shipping documentation
B	Unload property/materiel
C	Separate materiel by requisition priority
D	Separate materiel by size
E	Assign temporary location (tote box/pallet)
F	Sign receipt documentation
G	Take receipt to input terminal
H	Input/process receipt
I	Return to materiel, attach DD 1348/DOR
J	Stamp DOR with delivery priority
K	Take/move materiel to pick-up and delivery
L	Composite/total of all process steps

**Receipt - Due-Out Release**

A	51.70	13.07	12.40	8.50	9.18	26.64	40.11	15.10	4.94	40.14	234.55
B	12.78	13.02	9.94	8.51	10.58	33.61	48.93	17.84	4.57	48.57	304.14
C	15.64	13.54	6.92	10.88	9.20	26.09	43.11	11.02	4.80	43.34	266.95
D	15.96	13.54	14.29	7.03	8.84	10.54	28.36	41.48	18.91	4.88	40.26
E	70.41	15.70	12.11	10.35	8.67	10.33	23.04	55.39	17.23	4.52	48.18
F	121.78	15.35	12.33	8.77	10.88	33.55	52.62	17.26	4.84	38.85	327.95
G	124.01	14.91	9.93	9.64	8.44	10.67	26.57	42.89	21.11	4.87	43.80
H	110.78	12.21	9.46	9.15	7.49	8.40	9.30	32.25	60.54	21.13	4.88
I	114.84	13.09	7.03	52.21	7.74	9.52	10.63	31.07	41.77	16.77	4.79
J	118.71	11.17	11.18	8.30	10.83	22.07	57.13	16.37	4.69	44.23	316.55
K	115.41	14.14	11.71	8.72	9.36	10.39	27.87	44.18	16.03	4.90	39.41
L	52.79	14.15	14.28	9.80	9.39	10.00	22.81	40.27	21.63	4.84	43.28
M	126.75	12.10	9.50	12.01	10.95	10.15	31.68	49.45	19.51	4.79	47.42
N	68.09	13.19	11.50	9.36	10.69	10.21	31.27	41.90	17.14	4.41	41.34
O	104.55	15.00	13.85	10.57	9.38	11.22	22.20	58.31	19.51	4.81	48.24
P	119.35	14.59	11.79	10.41	9.63	9.57	26.64	58.84	13.91	4.88	49.55
Q	96.50	16.00	11.10	8.09	9.47	10.21	30.27	54.04	18.99	4.58	42.17
R	112.08	15.19	13.68	11.10	8.26	9.38	21.92	52.93	19.80	4.74	38.37
S	86.54	14.59	11.45	11.75	10.16	10.85	32.52	46.00	13.77	4.77	39.17
T	111.15	11.58	13.42	12.70	8.57	9.01	29.73	43.46	14.29	4.85	47.04
U	102.79	14.40	9.97	11.22	10.00	10.45	32.83	49.56	19.33	4.64	38.46
V	76.22	13.91	12.68	9.61	8.48	10.35	27.09	52.66	17.15	4.92	41.55
W	82.27	11.72	10.55	12.86	9.99	9.92	22.59	54.72	18.13	4.65	44.66
X	51.80	15.53	9.81	12.18	9.13	9.75	31.62	52.65	18.60	4.64	50.49
Y	92.90	11.69	12.97	11.83	10.68	10.71	26.73	42.24	15.82	4.80	49.00
Z	115.82	14.60	13.88	6.91	9.22	10.11	33.06	41.04	21.61	4.60	44.79
AA	120.29	13.77	10.51	7.66	10.29	10.82	31.65	45.76	18.79	4.79	38.26
AB	124.27	15.75	12.15	12.78	8.26	10.83	33.05	51.64	18.68	4.64	48.83
AC	109.99	14.35	13.19	8.70	9.05	9.25	26.75	46.10	19.93	4.71	37.30
AD	116.79	15.74	10.90	7.19	9.83	11.15	21.62	53.29	20.81	4.61	44.11
AE	134.64	11.58	11.92	11.21	9.89	9.52	32.09	51.45	15.71	4.74	38.22
AF	70.63	15.44	12.45	7.52	9.09	10.49	28.36	44.96	16.07	4.72	43.72
AG	132.93	12.31	13.36	8.13	9.59	10.22	33.36	56.91	16.60	4.54	344.47
AH	61.73	14.62	12.25	9.52	8.73	9.98	28.76	45.15	20.99	4.46	38.42
AI	74.66	15.48	13.38	9.72	10.62	10.37	28.83	40.82	17.97	4.56	49.83
AJ	100.13	15.79	13.39	8.23	11.01	10.55	26.26	50.35	19.31	4.55	38.34
AK	124.71	12.55	10.45	8.47	9.16	10.75	31.77	40.06	15.54	4.78	40.71
AL	52.58	11.95	10.34	9.35	9.40	11.01	33.54	60.55	18.87	4.77	45.65
AM	66.37	15.35	9.49	13.11	10.40	11.09	25.29	41.35	20.36	4.54	46.36
AN	47.57	11.00	11.46	9.57	9.36	10.95	22.51	49.58	17.89	4.92	41.31
AO	98.92	12.70	11.80	10.06	8.86	9.94	30.32	58.22	19.20	4.83	41.64
AP	95.74	12.24	10.48	11.24	8.37	11.25	22.72	41.54	17.25	4.59	45.95
AQ	118.29	15.23	10.70	12.33	9.42	10.49	31.82	42.28	11.82	4.55	39.49
AR	66.75	11.06	12.68	10.77	9.98	9.09	32.13	56.35	14.40	4.49	38.79
AS	81.34	13.25	11.41	10.50	10.65	9.90	28.24	49.47	20.61	4.57	48.22
AT	63.32	13.57	7.34	9.72	11.03	25.30	58.90	17.84	4.60	42.36	266.05

A	B	C	D	E	F	G	H	I	J	K	L
125.89	13.24	9.94	10.99	8.28	10.19	30.34	44.80	15.55	4.82	45.94	319.98
46.56	14.51	11.93	11.29	10.70	10.27	31.61	58.48	12.13	4.49	46.47	258.41
78.96	15.14	12.97	10.97	10.44	9.92	32.74	43.30	20.15	4.74	37.81	277.13
116.13	12.14	12.52	12.62	10.50	9.77	21.02	44.61	16.53	4.63	37.03	297.52
81.28	11.80	13.70	12.36	8.37	10.61	30.22	45.44	21.20	4.50	47.22	286.68
124.65	14.19	9.11	8.54	9.59	9.55	29.12	56.84	20.79	4.86	46.93	334.17
99.69	12.44	12.28	10.60	8.28	9.67	27.08	57.62	18.32	4.88	46.59	307.46
71.96	12.17	12.18	10.76	8.68	9.70	24.55	50.52	18.06	4.61	37.98	261.16
111.04	12.14	13.13	7.34	8.62	10.47	23.80	40.58	21.16	4.81	49.99	303.06
45.38	15.49	9.77	10.04	11.16	9.47	30.13	40.88	19.11	4.87	50.24	246.54
58.44	15.29	11.95	9.97	9.26	10.80	23.75	60.88	11.45	4.61	44.07	260.47
72.73	14.54	13.67	12.76	9.12	10.81	26.80	40.48	15.37	4.84	46.30	267.42
110.08	13.38	13.55	11.88	8.26	10.62	28.27	53.15	14.77	4.47	43.87	312.32
62.98	12.50	12.41	11.16	8.41	9.54	25.40	41.01	17.26	4.82	42.00	247.49
132.81	14.81	12.04	11.48	8.62	10.09	25.86	60.28	20.12	4.46	40.33	340.90
48.18	11.03	11.93	11.65	9.41	9.62	30.98	45.64	18.52	4.68	50.71	252.35
130.83	12.93	12.66	8.62	9.16	9.90	21.98	55.91	16.27	4.53	40.40	323.19
92.11	12.19	14.07	9.52	9.84	9.35	25.82	40.67	16.71	4.39	41.40	276.06
108.88	12.90	12.18	6.97	8.93	9.76	25.40	48.52	11.37	4.86	45.85	295.61
78.83	11.69	9.70	13.26	10.45	10.41	29.81	49.11	13.41	4.60	42.36	273.62
52.50	12.87	10.21	11.87	11.06	9.88	30.34	44.76	20.27	4.46	39.31	247.52
114.43	13.94	12.54	10.87	8.62	10.63	26.71	60.93	18.39	4.76	41.93	323.76
105.42	14.25	14.06	12.23	8.31	10.18	25.27	45.57	21.42	4.44	50.72	311.88
59.86	12.31	11.43	10.23	10.35	10.26	21.08	60.67	17.84	4.60	46.37	265.01
49.17	14.20	10.24	11.66	8.95	10.57	26.80	52.67	13.74	4.73	39.64	242.38
104.90	14.06	10.70	6.89	10.87	9.97	23.00	43.62	18.56	4.58	44.57	291.73
113.60	14.65	13.48	10.19	9.80	10.78	23.95	43.03	21.74	4.44	42.83	308.49
106.40	13.55	12.28	7.76	9.94	10.15	27.88	48.28	14.74	4.77	47.12	302.87
79.77	11.66	13.39	9.53	9.00	9.84	33.65	52.42	15.14	4.45	44.42	283.27
101.29	14.82	12.07	7.45	9.36	9.32	30.36	43.75	17.61	4.40	43.71	294.14
46.62	12.71	11.68	9.17	8.87	11.08	30.77	54.29	15.37	4.57	38.31	243.44
113.24	13.16	11.70	9.91	10.42	10.97	30.69	54.53	20.46	4.85	37.96	317.90
77.19	14.91	11.63	7.11	8.87	9.84	21.82	48.24	13.00	4.77	39.63	257.01
88.58	12.53	9.05	10.62	10.08	10.35	22.83	55.47	17.77	4.65	49.18	291.10
60.63	12.68	12.80	7.39	8.97	9.72	26.77	47.72	15.08	4.64	50.76	257.16
50.71	15.65	14.09	6.83	9.74	10.79	27.35	45.56	15.11	4.84	38.90	277.05
124.23	12.63	11.09	9.76	10.39	10.44	23.33	49.82	20.35	4.63	45.35	322.01
83.50	13.93	14.29	9.26	9.41	10.98	25.70	40.21	15.99	4.52	45.99	273.76
48.74	12.09	13.13	12.97	9.71	9.42	29.13	55.09	15.19	4.87	46.17	256.51
106.42	15.36	12.26	7.02	10.82	9.76	21.46	55.04	12.41	4.58	46.36	301.50
101.13	12.99	9.72	11.41	10.63	9.69	22.79	46.14	20.60	4.52	42.41	289.80
60.27	15.90	10.09	8.04	10.01	11.20	29.60	52.36	12.19	4.64	41.51	255.80
48.45	14.98	10.20	9.11	10.06	10.17	26.98	43.55	14.39	4.52	43.04	235.47
97.03	11.50	10.23	9.97	10.32	10.97	28.39	53.87	18.33	4.93	50.60	306.13

A	B	C	D	E	F	G	H	I	J	K	L
85.74	14.28	10.01	12.16	9.11	10.52	31.04	40.04	16.99	4.81	42.27	276.96
62.59	11.46	11.26	9.77	9.72	11.25	28.39	41.92	15.94	4.84	49.03	256.17
55.03	14.03	11.92	11.91	8.98	9.87	25.37	47.38	11.28	4.82	37.87	238.44
69.83	12.11	13.24	12.14	9.68	10.08	23.35	47.82	14.38	4.52	42.21	259.35
54.87	11.89	9.93	11.31	8.83	10.28	31.72	49.94	16.99	4.66	48.96	259.37
118.71	14.90	10.23	11.69	10.26	9.13	24.15	40.94	12.55	4.67	50.49	307.71
82.33	12.46	11.65	10.39	10.38	10.84	26.65	59.94	21.72	4.58	44.20	295.14
90.57	11.38	9.62	8.19	11.04	11.03	27.58	46.30	19.53	4.68	40.25	280.17
64.66	14.20	10.95	7.28	10.46	10.71	29.09	55.64	17.67	4.46	45.49	270.61
130.54	15.23	13.53	13.19	10.03	9.07	11.11	25.50	56.17	15.04	4.90	39.02
112.87	15.22	12.66	12.06	10.80	9.35	21.58	45.23	21.56	4.45	49.33	350.97
78.55	13.49	11.82	8.76	10.88	10.08	25.31	59.29	12.65	4.83	42.43	278.08
48.95	13.13	12.62	10.69	10.16	9.46	22.42	56.30	11.29	4.56	50.44	250.03
61.04	15.87	11.85	10.03	9.07	10.74	29.30	53.32	21.25	4.45	49.33	316.73
87.91	15.78	14.40	7.66	10.16	9.58	22.02	40.20	16.52	4.88	49.33	278.43
99.90	11.57	9.68	8.24	10.69	9.12	29.63	51.76	15.23	4.61	37.46	287.89
125.27	11.66	13.83	9.52	8.67	10.06	28.53	43.74	12.15	4.77	38.18	306.37
59.77	13.43	9.56	10.04	9.93	10.65	21.27	57.15	17.97	4.42	47.01	261.20
123.39	15.90	9.37	11.24	9.63	9.15	28.82	56.73	17.22	4.66	49.36	335.49
126.25	15.31	12.71	12.63	9.90	10.36	25.24	49.24	14.80	4.51	47.80	328.76
84.66	13.85	9.93	7.73	10.59	9.73	22.48	49.33	17.18	4.91	39.58	269.97
124.60	15.64	14.25	10.33	10.64	10.24	28.08	42.31	14.89	4.73	40.33	316.04
66.85	15.51	13.20	8.28	10.91	11.17	24.28	53.24	16.58	4.39	48.56	272.97
61.59	14.87	10.39	11.23	8.23	10.13	25.20	40.78	18.49	4.84	39.08	244.82
112.41	11.32	9.23	10.47	9.55	10.03	32.17	56.54	11.02	4.44	43.24	310.42
80.78	13.29	13.28	11.82	10.30	9.89	22.87	43.56	18.24	4.85	44.39	273.27
88.24	15.14	11.96	8.28	10.47	9.25	31.67	54.31	13.49	4.62	50.23	297.67
131.05	14.96	13.03	7.82	11.06	9.90	24.08	59.25	16.34	4.76	40.28	332.55
82.34	11.08	13.61	10.92	10.39	9.01	24.81	60.11	17.18	4.85	45.90	290.20
58.37	11.16	9.09	11.43	8.43	9.37	26.21	60.70	17.01	4.72	42.79	259.26
102.73	13.79	11.70	11.59	8.48	11.04	32.78	52.40	12.28	4.76	43.10	304.66
99.87	11.29	11.76	6.95	9.37	9.63	31.73	45.49	12.27	4.43	49.47	292.25
124.09	11.90	11.97	8.81	10.96	11.02	33.04	59.84	18.29	4.92	43.85	338.69
87.78	13.96	14.04	9.00	8.43	10.80	25.09	48.51	21.40	4.80	48.98	292.78
68.38	15.74	11.20	9.67	11.09	9.51	29.79	49.86	18.26	4.45	37.04	264.98
48.65	14.34	11.22	10.18	9.43	11.13	31.13	46.01	20.34	4.85	48.62	255.90
76.18	14.00	13.26	8.75	9.11	10.70	28.89	57.72	21.72	4.85	50.45	295.62
117.98	12.42	9.49	8.21	11.11	10.01	27.14	52.18	17.65	4.82	39.10	310.12
125.95	13.12	9.49	12.58	10.20	10.72	24.96	50.20	16.00	4.54	43.29	321.05
128.79	11.85	9.47	7.94	8.85	9.69	29.68	42.15	11.28	4.44	44.06	308.22
54.91	13.12	11.37	6.88	9.91	9.19	25.81	52.10	20.65	4.62	50.35	258.91
51.13	13.51	13.50	11.35	11.10	10.33	31.36	50.83	11.26	4.75	40.00	249.11
124.85	15.15	13.77	7.65	9.16	9.36	33.79	60.64	21.49	4.72	41.24	341.83
73.59	13.04	10.93	11.27	8.70	10.36	33.65	53.58	16.36	4.59	44.07	280.13
103.81	13.52	9.48	9.86	10.75	10.88	28.39	50.40	13.75	4.58	40.54	295.95
105.92	13.28	13.87	12.11	10.08	9.10	32.02	43.51	14.62	4.76	39.16	298.43
45.46	11.22	12.61	7.74	9.50	9.23	21.93	46.80	16.80	4.46	50.23	235.98
92.34	12.76	10.55	6.95	9.69	9.31	25.76	54.87	11.29	4.49	41.27	279.28

A	B	C	D	E	F	G	H	I	J	K	L
127.81	13.38	12.03	11.14	8.34	9.63	32.90	57.26	19.23	4.55	37.37	333.65
54.99	11.11	9.78	7.49	8.78	9.46	31.13	54.70	17.93	4.75	42.05	252.17
113.04	12.01	11.56	6.82	8.84	10.15	31.63	45.87	16.24	4.93	38.14	299.23
116.62	11.00	12.60	12.79	8.34	9.50	29.85	42.69	11.13	4.71	45.04	304.27
117.89	14.76	10.70	11.90	10.36	9.44	27.51	45.41	18.29	4.75	41.05	312.06
65.46	13.23	11.60	12.76	9.84	10.53	32.75	57.14	13.07	4.83	45.39	276.59
70.98	15.35	9.38	7.53	10.67	10.01	33.05	45.65	18.45	4.38	44.00	269.46
77.96	13.07	11.20	7.89	10.19	9.81	22.68	58.78	11.15	4.86	47.21	274.81
73.05	11.33	9.44	12.25	10.39	9.33	27.39	56.20	14.50	4.74	40.57	269.20
121.87	13.52	10.66	9.91	9.78	9.27	26.26	55.55	11.20	4.83	38.54	311.39
65.10	14.34	11.15	11.32	9.10	10.04	26.62	58.39	17.10	4.65	41.26	269.06
60.73	15.27	11.36	9.83	10.01	9.23	33.76	50.47	18.63	4.81	37.66	261.77
128.34	14.18	14.13	8.57	8.29	9.06	32.96	46.61	20.58	4.44	47.30	334.44
56.08	15.23	10.01	13.23	9.98	11.13	28.61	48.58	15.54	4.66	47.67	260.71
99.41	15.26	10.19	9.19	8.95	11.17	33.55	55.15	15.27	4.53	47.22	309.89
55.63	14.22	12.72	11.00	10.69	9.43	32.54	44.46	18.67	4.78	40.01	254.14
110.71	11.66	10.04	8.80	9.56	9.76	30.23	48.12	16.72	4.63	38.57	298.80
112.74	11.56	9.39	7.72	10.67	10.35	32.73	42.05	14.71	4.80	49.54	306.25
65.00	11.51	9.74	12.61	10.16	9.79	25.73	58.74	20.59	4.53	44.07	272.49
87.56	12.95	13.79	9.53	9.40	9.59	27.51	58.87	19.13	4.67	48.65	301.45
48.80	15.91	13.53	8.12	10.82	10.70	33.93	44.26	11.07	4.64	48.15	249.92
69.75	11.11	11.62	9.86	8.91	10.89	26.15	42.86	19.69	4.91	39.69	255.43
122.76	13.00	13.47	12.63	8.50	11.15	31.33	56.34	18.89	4.74	41.17	333.98
105.47	15.47	13.02	13.00	9.37	10.27	32.80	44.26	14.94	4.84	43.35	306.79
61.77	12.51	11.75	7.36	9.72	10.63	30.28	50.10	15.87	4.75	39.91	254.65
79.04	13.62	12.02	7.50	8.45	9.98	24.65	50.97	13.75	4.77	43.16	267.91
122.36	12.37	9.27	7.69	9.95	9.62	26.26	45.32	17.61	4.89	46.83	311.16
72.93	12.85	12.82	10.26	9.96	9.43	24.09	60.54	12.37	4.86	49.57	279.68
71.23	13.97	13.92	9.43	9.69	10.00	21.40	51.01	21.61	4.52	48.82	275.59
77.18	13.34	9.55	12.26	9.21	9.70	22.83	48.35	16.23	4.62	45.18	268.46
98.82	15.74	13.14	6.84	8.47	10.81	22.80	58.71	19.91	4.73	44.02	304.00
134.32	11.77	13.92	13.03	8.43	10.09	26.65	42.26	12.89	4.59	38.48	316.43
57.24	12.48	13.63	11.49	11.18	9.85	21.91	46.94	15.27	4.81	40.41	245.21
94.23	13.25	12.29	13.01	11.16	9.85	25.91	60.08	18.81	4.42	40.34	303.35
111.16	14.65	14.39	9.07	9.97	10.08	31.78	44.54	13.71	4.58	47.34	311.26
59.14	15.11	10.72	12.77	8.67	10.54	21.80	50.45	17.82	4.70	41.72	253.45
129.03	15.07	12.36	9.64	10.50	10.85	24.66	46.08	21.60	4.66	37.72	322.18
63.41	11.91	14.36	9.21	9.55	9.28	31.37	60.80	19.52	4.77	47.97	282.14
68.97	12.44	11.66	7.84	9.03	11.23	33.45	58.24	16.08	4.57	45.04	278.56
71.25	12.45	12.58	13.02	10.57	9.29	23.36	47.14	17.16	4.75	47.53	269.10
121.98	12.05	9.33	10.90	10.43	9.94	27.41	48.31	11.03	4.50	50.31	316.18
125.16	11.74	12.79	9.99	10.71	10.92	29.03	43.72	18.22	4.53	46.04	322.86
119.89	11.61	13.13	7.13	9.28	9.98	27.32	58.49	16.32	4.88	44.11	322.13
75.71	11.20	13.12	12.61	8.46	10.53	26.60	51.15	17.09	4.78	41.99	273.23
57.67	14.96	13.87	13.27	10.14	10.96	24.36	59.97	17.74	4.50	49.67	277.10
109.68	14.82	14.11	12.81	8.51	9.75	32.07	41.62	16.12	4.73	302.58	245.29
45.38	11.05	9.67	12.20	9.07	9.90	32.17	58.44	12.43	4.73	40.24	45.46
65.18	11.01	10.92	9.00	9.00	11.11	25.95	41.26	20.01	4.60	25.55	

A	B	C	D	E	F	G	H	I	J	K	L
111.59	14.06	11.47	6.87	8.26	9.13	26.71	57.15	17.39	4.81	43.07	310.48
103.43	12.98	11.31	6.86	10.20	10.36	29.07	47.27	19.67	4.88	42.54	298.58
86.56	14.53	12.06	10.77	10.79	9.71	21.49	51.79	21.74	4.72	43.24	287.41
125.82	14.94	10.32	11.32	10.67	9.59	29.81	52.29	14.51	4.46	45.73	329.46
123.18	15.57	11.71	10.32	8.22	11.19	23.07	53.62	19.49	4.92	43.07	324.37
54.05	13.12	11.64	12.28	8.37	10.51	30.28	59.10	12.39	4.87	50.79	267.42
52.64	14.53	12.67	11.73	10.58	10.40	32.94	41.06	21.12	4.59	43.51	255.77
124.75	12.48	11.22	7.15	10.72	11.17	32.77	52.90	13.36	4.53	38.19	319.24
103.45	13.82	10.52	9.65	9.83	10.35	25.81	47.49	14.32	4.64	49.30	299.18
70.08	14.95	12.26	11.84	10.95	10.53	31.38	50.83	15.13	4.88	42.21	275.03
87.37	15.09	13.46	12.99	9.90	10.95	25.15	46.50	17.28	4.65	40.71	284.05
93.35	12.83	12.02	8.49	9.00	9.13	33.67	47.22	15.24	4.65	48.83	294.44
131.17	15.95	14.12	11.37	11.13	10.62	24.31	44.26	17.32	4.49	44.33	329.07
48.58	11.15	13.23	11.14	9.73	11.04	26.14	60.50	19.49	4.67	45.23	260.89
125.51	15.29	11.19	11.05	9.79	9.21	24.08	54.54	15.18	4.84	45.22	325.91
113.75	15.15	10.27	10.01	9.79	9.42	27.44	45.90	17.74	4.81	43.73	308.01
56.95	12.53	12.28	9.23	8.54	10.64	31.10	46.50	13.21	4.77	41.49	247.23
122.61	14.92	11.08	13.01	8.59	10.50	25.31	52.54	11.49	4.69	38.13	312.86
124.98	11.04	11.92	7.98	10.39	10.95	33.95	52.60	15.17	4.72	50.17	333.88
47.90	14.24	9.40	12.98	10.14	10.95	21.82	60.23	15.01	4.92	46.93	254.52
73.42	14.66	11.28	10.16	9.85	11.14	21.02	43.45	20.09	4.70	45.13	264.90
120.47	11.42	12.70	7.71	10.62	10.65	24.47	56.56	11.17	4.62	39.76	310.14
66.43	15.91	13.36	9.21	9.26	10.37	31.91	45.56	21.48	4.40	50.15	278.04
134.22	15.46	12.64	12.07	10.51	9.87	31.64	55.27	19.02	4.69	48.14	353.53
125.71	11.28	10.12	11.31	9.97	9.02	26.43	59.46	11.60	4.88	43.94	323.73
101.66	14.66	11.14	11.42	8.60	9.56	29.60	43.76	21.13	4.39	42.83	298.76
68.43	13.30	13.28	11.91	9.36	9.03	23.27	53.82	12.83	4.62	37.92	257.78
80.80	12.75	10.45	7.39	9.53	10.29	23.09	55.16	13.56	4.81	44.29	272.11
55.69	15.20	10.70	8.30	8.46	10.26	25.62	44.51	18.23	4.55	45.45	246.97
130.66	14.13	13.76	11.40	9.25	9.22	33.75	40.52	13.67	4.88	49.57	330.82
89.80	14.31	12.95	9.18	8.76	10.60	23.99	55.23	14.14	4.47	42.50	285.94
96.17	11.99	12.64	11.13	10.53	11.01	22.09	55.32	16.02	4.44	40.35	291.69
96.70	13.36	13.84	9.90	9.06	9.24	23.22	41.90	15.23	4.64	39.18	276.27
50.06	14.98	13.84	8.37	9.11	9.90	23.35	51.42	11.49	4.50	39.03	236.05
50.42	13.98	9.79	12.24	10.82	10.50	26.29	52.42	15.34	4.58	42.59	248.98
116.35	11.27	11.30	11.86	8.71	9.78	21.33	44.79	15.26	4.91	41.71	297.27
57.43	12.43	11.58	7.48	8.83	9.32	33.39	49.08	17.93	4.57	49.70	261.74
121.03	14.69	12.22	7.99	10.63	9.94	26.33	47.81	12.11	4.85	44.17	311.77
96.65	12.96	10.43	11.81	9.65	10.08	31.70	60.07	21.06	4.82	45.05	314.26
94.86	11.14	10.50	9.44	9.03	10.21	24.70	49.53	15.04	4.55	40.70	279.69
111.75	14.05	11.22	11.70	11.07	10.70	28.60	47.29	18.41	4.71	47.81	317.32
100.04	11.30	12.70	10.20	10.93	10.52	32.26	42.00	21.55	4.53	48.01	304.04
54.85	12.00	9.96	6.86	8.66	10.16	21.95	53.32	15.18	4.80	48.42	246.14
63.68	15.25	11.95	12.61	8.68	10.77	33.32	52.70	11.66	4.57	44.13	269.31
92.79	13.80	13.25	8.13	8.41	11.03	30.84	52.84	20.94	4.45	37.99	294.46
72.34	12.02	11.40	10.72	10.56	10.72	42.72	19.07	4.73	40.28	268.40	
106.51	11.74	11.05	11.49	11.11	10.31	21.86	47.64	14.22	4.64	38.81	289.38
74.56	14.55	13.84	7.94	9.06	11.00	22.37	52.14	13.07	4.85	46.76	270.16

A	B	C	D	E	F	G	H	I	J	K	L
49.35	12.33	12.81	11.74	10.43	11.19	29.76	55.39	15.68	4.55	37.43	250.67
66.95	14.34	10.89	13.13	9.13	10.85	23.91	49.49	18.70	4.63	39.28	261.30
52.35	13.30	10.52	11.03	11.18	10.31	23.77	55.39	14.62	4.65	43.05	250.17
58.26	13.92	13.18	11.88	10.01	9.87	22.47	44.85	14.21	4.61	41.95	245.21
106.17	13.69	12.48	12.18	10.00	11.07	25.25	60.21	17.20	4.81	46.98	320.02
65.21	13.94	9.91	12.97	9.16	10.69	27.92	48.41	16.15	4.46	37.93	256.76
54.87	12.08	11.75	7.91	10.37	11.04	32.80	59.91	14.71	4.74	47.61	267.79
46.09	11.94	14.29	8.06	10.63	11.15	25.98	58.05	14.20	4.70	38.95	244.03
80.49	14.32	13.66	9.56	9.89	10.04	32.78	42.35	13.48	4.90	44.90	276.37
63.06	15.23	14.19	7.61	9.51	11.11	23.52	46.78	18.65	4.93	45.36	259.96
64.24	12.31	11.23	11.37	10.73	11.09	25.37	60.58	12.27	4.76	44.83	268.78
120.37	15.23	10.07	7.50	10.11	9.00	25.69	49.20	14.29	4.73	41.04	307.24
72.02	13.09	13.67	12.53	8.46	9.29	28.07	58.79	11.42	4.86	44.31	276.53
120.00	14.32	10.89	7.94	10.18	10.37	21.72	60.80	12.23	4.90	42.87	316.22
134.16	14.59	9.08	13.23	10.15	9.09	24.46	54.69	15.49	4.73	46.44	336.10
95.71	15.98	9.24	7.29	11.11	9.61	24.70	55.65	11.87	4.53	46.14	291.82
125.43	14.92	12.19	8.37	10.54	10.37	23.86	43.37	18.58	4.68	45.42	317.73
50.39	14.16	13.58	13.28	8.77	9.87	30.99	50.44	11.18	4.71	38.34	245.70
122.13	14.39	9.10	11.78	8.46	10.33	22.82	58.74	20.81	4.52	47.18	330.26
64.06	15.56	9.08	11.10	9.50	10.36	24.18	51.03	19.29	4.84	43.58	262.57
90.32	15.99	13.40	11.44	8.75	10.94	26.52	50.10	14.65	4.60	39.66	286.38
132.53	15.73	12.91	11.32	10.18	10.54	33.68	44.06	17.71	4.92	41.83	335.44
102.76	13.42	12.08	13.00	9.37	9.21	29.94	48.62	20.69	4.65	41.33	305.06
68.92	14.38	10.95	10.51	8.96	10.63	29.44	41.46	20.89	4.40	44.08	264.63
94.20	14.75	12.27	9.53	9.60	11.00	30.09	58.32	20.19	4.65	41.87	306.47
112.38	11.05	9.20	7.97	9.86	10.30	22.80	47.82	21.14	4.81	42.42	299.74
66.30	12.42	12.00	7.16	8.82	10.12	29.17	57.28	17.26	4.83	42.17	267.55
130.57	14.03	11.43	7.31	10.35	9.42	30.12	45.41	19.11	4.73	48.69	331.18
121.49	15.15	12.94	12.59	8.88	11.18	33.96	42.13	15.91	4.48	40.66	319.27
117.16	15.90	12.85	8.62	8.21	10.80	29.95	42.52	20.62	4.74	49.47	320.83
52.83	12.84	11.68	12.45	8.99	10.39	30.28	55.49	14.58	4.70	39.57	253.81
47.38	15.11	13.59	7.09	10.51	9.59	26.42	41.27	15.76	4.49	46.57	237.79
82.78	14.93	10.00	11.05	8.75	10.62	28.68	52.80	12.18	4.65	43.27	279.72
115.52	15.89	13.52	7.09	8.84	9.15	22.49	59.27	14.35	4.57	50.83	321.52
99.83	15.04	11.54	10.26	8.78	9.30	31.45	42.44	15.48	4.76	39.73	284.19
122.1	10.65	7.25	9.37	10.68	10.31	31.48	54.75	15.48	4.40	39.51	295.61
127.17	11.47	12.08	7.74	8.93	11.24	33.60	53.98	13.15	4.75	41.57	325.69
58.66	15.98	14.27	7.22	9.21	9.92	28.79	58.90	20.68	4.92	50.81	279.35
133.72	12.93	11.54	10.31	8.79	10.19	29.90	58.85	14.88	4.83	42.57	338.52
81.51	13.13	9.26	9.83	8.49	10.80	21.55	58.57	12.96	4.39	38.63	269.11
129.83	11.41	13.22	11.79	10.15	11.09	27.27	49.20	13.05	4.86	40.42	322.30
87.56	13.61	12.03	7.81	9.88	9.85	21.45	55.38	17.22	4.62	41.56	280.96
78.91	15.80	10.53	10.49	10.08	22.15	47.10	12.96	4.45	43.52	266.85	
87.10	14.59	12.17	10.83	10.42	10.22	33.15	60.01	11.33	4.47	40.68	294.99
129.12	15.50	9.66	9.28	11.00	10.52	23.68	51.23	18.33	4.82	45.61	328.75
68.54	15.96	10.26	9.26	10.64	10.94	23.87	44.37	15.49	4.39	46.90	260.63
79.52	11.58	13.55	10.15	11.14	9.88	22.38	56.25	20.39	4.68	39.43	278.96
133.78	11.50	9.30	11.85	8.75	10.93	24.32	47.05	12.45	4.82	48.31	323.06

A	B	C	D	E	F	G	H	I	J	K	L
80.03	12.93	12.74	11.65	9.00	10.00	22.42	47.10	15.03	4.64	47.89	273.43
109.75	14.18	9.01	8.37	8.77	10.14	29.15	49.08	11.60	4.42	47.60	302.07
115.20	14.72	10.52	12.03	8.95	9.27	33.75	56.86	14.69	4.61	45.42	326.02
85.50	11.89	10.25	7.22	10.11	10.92	31.42	60.23	11.17	4.71	45.76	289.17
102.02	15.56	11.16	11.91	9.03	9.28	31.06	54.84	21.62	4.77	49.16	320.42
116.59	11.83	12.15	8.46	10.80	11.23	22.64	42.91	11.25	4.50	44.39	296.75
101.79	11.68	13.50	9.81	9.57	9.23	23.69	45.44	12.32	4.85	44.93	286.82
127.50	13.78	12.36	10.93	10.95	10.92	28.51	42.87	17.48	4.74	45.65	325.69
59.87	11.21	10.13	12.26	8.59	10.63	29.85	54.76	15.36	4.86	39.17	256.67
105.25	15.00	12.79	8.58	9.01	10.74	22.11	60.02	11.41	4.75	41.76	301.42
125.16	13.64	9.73	13.24	9.08	9.86	27.37	53.46	17.72	4.45	48.84	332.55
50.06	14.31	9.90	11.43	9.14	10.76	24.78	44.49	11.52	4.93	46.03	237.35
105.32	13.70	14.39	11.91	11.12	10.13	32.39	48.98	19.70	4.90	48.44	320.96
116.52	11.21	9.10	10.46	9.33	11.01	33.72	51.73	11.37	4.78	37.58	306.81

**A.2****ROUTINE RECEIPT WITH NOTICE-TO-STOCK**

The following pages contain the raw data collected during the process flow/time and motion effort for the routine receipt with notice-to-stock process. The process flow is depicted in Section 6, Figure 6-2. A composite of the raw data collected for the process is provided in Section 6, Table 6-2. Raw data displayed represent actual times captured (in seconds) for each observed occurrence of the process (rows) and correlate to individual process steps (columns) as follows:

<u>Column</u>	<u>Process Step</u>
A	Review bill of lading/shipping documentation
B	Unload property/materiel
C	Separate materiel by requisition priority
D	Separate materiel by size
E	Assign temporary location (tote box/pallet)
F	Sign receipt documentation
G	Take receipt to input terminal
H	Input/process receipt
I	Return to materiel
J	Attach DD 1348/DOR — move materiel to storage and issue area
K	Composite/total of all process steps

**Receipt — Notice To Stock**

A	B	C	D	E	F	G	H	I	J	K
51.70	12.78	13.07	12.40	8.50	9.18	26.64	40.11	23.14	15.10	212.61
92.93	15.64	13.02	9.94	8.51	10.58	33.61	40.59	23.79	17.84	266.45
82.08	15.96	13.54	6.92	10.88	9.20	26.09	40.95	27.96	11.02	244.61
70.41	15.70	14.29	7.03	8.84	10.54	28.36	52.08	26.35	18.91	252.52
121.78	15.35	12.11	10.35	8.67	10.33	23.04	59.53	23.41	17.23	301.79
124.01	14.91	9.93	12.33	8.77	10.88	33.55	52.62	23.48	17.26	307.73
110.78	12.21	9.46	9.64	8.44	10.67	26.57	42.89	22.57	21.11	274.34
114.84	13.09	9.15	7.49	8.40	9.30	32.25	60.54	27.04	21.13	303.23
52.21	13.77	9.04	7.74	9.52	10.63	31.07	41.77	23.97	16.77	221.50
118.71	11.17	11.87	11.18	8.30	10.83	22.07	57.13	23.39	16.37	291.02
115.41	14.14	11.71	8.72	9.36	10.39	27.87	44.18	22.52	16.03	280.34
52.79	14.15	14.28	9.80	9.39	10.00	22.81	40.27	27.63	21.63	222.75
126.75	12.10	9.50	12.01	10.95	10.15	31.68	49.45	28.38	19.51	310.49
68.09	13.19	11.50	9.36	10.69	10.21	31.27	41.90	26.86	17.14	240.21
104.55	15.00	13.85	10.57	9.38	11.22	22.20	58.31	24.29	19.51	288.88
119.35	14.59	11.79	10.41	9.63	9.57	26.64	58.84	25.65	13.91	300.39
96.50	16.00	11.10	8.09	9.47	10.21	30.27	54.04	27.98	18.99	282.65
112.08	15.19	13.68	11.10	8.26	9.38	21.92	52.93	24.58	19.80	288.91
86.54	14.59	11.45	11.75	10.16	10.85	32.52	46.00	24.66	13.77	262.30
111.15	11.58	13.42	12.70	8.57	9.01	29.73	43.46	26.13	14.29	280.04
102.79	14.40	9.97	11.22	10.00	10.45	32.83	49.56	24.68	19.33	285.23
76.22	13.91	12.68	9.61	8.48	10.35	27.09	52.66	21.96	17.15	250.10
82.27	11.72	10.55	12.86	9.99	9.92	22.59	54.72	22.84	18.13	255.60
51.80	15.53	9.81	12.18	9.13	9.75	31.62	52.65	27.66	18.60	238.72
92.90	11.69	12.97	11.83	10.68	10.71	26.73	42.24	23.59	15.82	259.16
115.82	14.60	13.88	6.91	9.22	10.11	33.06	41.04	25.97	21.61	292.22
120.29	13.77	10.51	7.66	10.29	10.82	31.65	45.76	24.90	18.79	294.42
124.27	15.75	12.15	12.78	8.26	10.83	33.05	51.64	23.22	18.68	310.63
109.99	14.35	13.19	8.70	9.05	9.25	26.75	46.10	21.83	19.93	279.12
116.79	15.74	10.90	7.19	9.83	11.15	21.62	53.29	27.70	20.81	295.02
134.64	11.58	11.92	11.21	9.89	9.52	32.09	51.45	28.86	15.71	316.86
70.63	15.44	12.45	7.52	9.09	10.49	28.36	44.96	27.64	16.07	242.65
132.93	12.31	13.36	8.13	9.59	10.22	33.36	56.91	24.18	16.60	317.59
61.73	14.62	12.25	9.52	8.73	9.98	28.76	45.15	21.78	20.99	233.51
74.66	15.48	13.38	9.72	10.62	10.37	28.83	40.82	23.87	17.97	245.73
100.13	15.79	13.39	8.23	11.01	10.55	26.26	50.35	24.60	19.31	279.62
124.71	12.55	10.45	8.47	9.16	10.75	31.77	40.06	29.12	15.54	292.60
52.58	11.95	10.34	9.35	9.40	11.01	33.54	60.55	24.81	18.87	242.39
66.37	15.35	9.49	13.11	10.40	10.40	25.29	41.35	28.79	20.36	241.59
47.57	11.00	11.46	9.57	9.36	10.95	22.51	49.58	27.32	17.89	217.20
98.92	12.70	11.80	10.06	8.86	9.94	30.32	58.22	29.26	19.20	289.29
95.74	12.24	10.48	11.24	8.37	11.25	22.72	41.54	24.78	17.25	255.63
118.29	15.23	10.70	12.33	9.42	10.49	31.82	42.28	29.21	11.82	291.58
66.75	11.06	12.68	10.77	9.98	9.09	32.13	56.35	27.51	14.40	250.73

A	B	C	D	E	F	G	H	I	J	K
81.34	13.25	11.41	10.50	9.90	9.24	28.24	49.47	28.31	20.61	263.68
63.32	12.08	13.57	7.34	9.72	11.03	25.30	58.90	25.10	17.84	244.20
125.89	13.24	9.94	10.99	8.28	10.19	30.34	44.80	29.34	15.55	298.57
46.56	14.51	11.93	11.29	10.70	10.27	31.61	58.48	24.82	12.13	232.28
78.96	15.14	12.97	10.97	10.44	9.92	32.74	43.30	27.09	20.15	261.68
116.13	12.14	12.52	12.62	10.50	9.77	21.02	44.61	29.40	16.53	285.26
81.28	11.80	13.70	12.36	8.37	10.61	30.22	45.44	25.82	21.20	260.79
124.65	14.19	9.11	8.54	9.59	9.55	29.12	56.84	22.76	20.79	305.14
99.69	12.44	12.28	10.60	8.28	9.67	27.08	57.62	22.82	18.32	278.81
71.96	12.17	12.18	10.76	8.68	9.70	24.55	50.52	23.26	18.06	241.83
111.04	12.14	13.13	7.34	8.62	10.47	23.80	40.58	23.63	21.16	271.91
45.38	15.49	9.77	10.04	11.16	9.47	30.13	40.88	22.78	19.11	214.21
58.44	15.29	11.95	9.97	9.26	10.80	23.75	60.88	23.34	11.45	235.13
72.73	14.54	13.67	12.76	9.12	10.81	26.80	40.48	25.20	15.37	241.48
110.08	13.38	13.55	11.88	8.26	10.62	28.27	53.15	21.74	14.77	285.71
62.98	12.50	12.41	11.16	8.41	9.54	25.40	41.01	28.66	17.26	229.34
132.81	14.81	12.04	11.48	8.62	10.09	25.86	60.28	23.46	20.12	319.56
48.18	11.03	11.93	11.65	9.41	9.62	30.98	45.64	22.50	21.52	219.46
130.83	12.93	12.66	8.62	9.16	9.90	21.98	55.91	23.61	16.27	301.87
92.11	12.19	14.07	9.52	9.84	9.35	25.82	40.67	23.86	16.71	254.14
108.88	12.90	12.18	6.97	8.93	9.76	25.40	48.52	28.15	11.37	273.05
78.83	11.69	9.70	13.26	10.45	10.41	29.81	49.11	23.75	13.41	250.41
52.50	12.87	10.21	11.87	11.06	9.88	30.34	44.76	23.14	20.27	226.89
114.43	13.94	12.54	10.87	8.62	10.63	26.71	60.93	28.60	18.39	305.67
105.42	14.25	14.06	12.23	8.31	10.18	25.27	45.57	28.48	21.42	285.20
59.86	12.31	11.43	10.23	10.35	10.26	21.08	60.67	24.64	17.84	238.68
49.17	14.20	10.24	11.66	8.95	10.57	26.80	52.67	27.07	13.74	225.08
104.90	14.06	10.70	6.89	10.87	9.97	23.00	43.62	24.99	18.56	267.57
113.60	14.65	13.48	10.19	9.80	10.78	23.95	43.03	26.68	21.74	287.90
106.40	13.55	12.28	7.76	9.94	10.15	27.88	48.28	26.35	14.74	277.33
79.77	11.66	13.39	9.53	9.00	9.84	33.65	52.42	28.48	15.14	262.88
101.29	14.82	12.07	7.45	9.36	9.32	30.36	43.75	24.45	17.61	270.48
46.62	12.71	11.68	9.17	8.87	11.08	30.77	54.29	23.74	15.37	224.30
113.24	13.16	11.70	9.91	10.42	10.97	30.69	54.53	28.43	20.46	303.51
77.19	14.91	11.63	7.11	8.87	9.84	21.82	48.24	26.38	13.00	238.99
88.58	12.53	9.05	10.62	10.08	10.35	22.83	55.47	24.72	17.77	261.99
60.63	12.68	12.80	7.39	8.97	9.72	26.77	47.72	24.58	15.08	226.35
87.95	15.87	14.09	6.83	9.74	10.79	27.35	45.56	25.77	15.11	259.07
104.00	15.12	11.18	12.73	8.91	10.78	22.83	51.21	23.30	21.33	281.38
54.42	15.73	11.75	12.04	8.29	9.19	24.02	46.72	26.08	17.82	226.07
68.70	13.81	11.51	11.48	10.45	10.80	33.78	47.83	23.69	18.42	250.47
50.71	15.65	10.38	11.83	11.13	10.20	26.79	59.48	23.59	11.29	231.04
124.23	12.63	11.09	9.76	10.39	10.44	23.33	49.82	24.89	20.35	296.92
83.50	13.93	14.29	9.26	9.41	10.98	25.70	40.21	25.78	15.99	249.03
48.74	12.09	13.13	12.97	9.71	9.42	29.13	55.09	24.51	15.19	229.98
106.42	15.36	12.26	7.02	10.82	9.76	21.46	55.04	22.64	12.41	273.19
101.13	12.99	9.72	11.41	10.63	9.69	22.79	46.14	23.64	20.60	268.74
60.27	15.90	10.09	8.04	10.01	11.20	29.60	52.36	23.74	12.19	233.39

A	B	C	D	E	F	G	H	I	J	K
48.45	14.98	10.20	9.11	10.17	26.98	43.55	27.34	14.39	215.25	215.25
97.03	11.50	10.23	9.97	10.32	28.39	53.87	25.78	18.33	276.38	276.38
85.74	14.28	10.01	12.16	9.11	10.52	31.04	40.04	21.80	251.68	251.68
62.59	11.46	11.26	9.77	9.72	11.25	28.39	41.92	26.76	15.94	229.06
55.03	14.03	11.92	11.91	8.98	9.87	25.37	47.38	22.76	11.28	218.52
69.83	12.11	13.24	12.14	9.68	10.08	23.35	47.82	22.46	14.38	235.08
54.87	11.89	9.93	11.31	8.83	10.28	31.72	49.94	29.16	16.99	234.92
118.71	14.90	10.23	11.69	10.26	9.13	24.15	40.94	25.12	12.55	277.68
82.33	12.46	11.65	10.39	10.38	10.84	26.65	59.94	28.35	21.72	274.70
90.57	11.38	9.62	8.19	11.04	11.03	27.58	46.30	26.16	19.53	261.40
64.66	14.20	10.95	7.28	10.46	10.71	29.09	55.64	23.42	17.67	244.08
130.54	15.23	13.53	13.19	10.10	10.74	29.30	53.32	28.83	21.25	326.03
112.87	15.22	12.66	12.06	10.80	9.35	21.58	45.23	23.91	21.56	285.23
78.55	13.49	11.82	8.76	10.88	10.08	25.31	59.29	23.09	12.65	253.91
48.95	13.13	12.62	10.69	10.16	9.46	22.42	56.30	22.48	11.29	217.51
61.04	15.87	11.85	10.03	9.07	11.11	25.50	56.17	22.47	15.04	238.14
87.91	15.78	14.40	7.66	10.16	9.58	22.02	40.20	25.63	16.52	249.85
99.90	11.57	9.68	8.24	10.69	9.12	29.63	51.76	27.07	15.23	272.89
125.27	11.66	13.83	9.52	8.67	10.06	28.53	43.74	23.26	12.15	286.68
59.77	13.43	9.56	10.04	9.93	10.65	21.27	57.15	27.13	17.97	236.90
123.39	15.90	9.37	11.24	9.63	9.15	28.82	56.73	22.85	17.22	304.31
126.25	15.31	12.71	12.63	9.90	10.36	25.24	49.24	23.71	14.80	300.16
84.66	13.85	9.93	7.73	10.59	9.73	22.48	49.33	28.57	17.18	254.05
124.60	15.64	14.25	10.33	10.64	10.24	28.08	42.31	22.93	14.89	293.91
66.85	15.51	13.20	8.28	10.91	11.17	24.28	53.24	26.07	16.58	246.09
61.59	14.87	10.39	11.23	8.23	10.13	25.20	40.78	21.99	18.49	222.89
112.41	11.32	9.23	10.47	9.55	10.03	32.17	56.54	26.73	11.02	289.47
80.78	13.29	13.28	11.82	10.30	9.89	22.87	43.56	24.65	18.24	248.69
88.24	15.14	11.96	8.28	10.47	9.25	31.67	54.31	25.44	13.49	268.26
131.05	14.96	13.03	7.82	11.06	9.90	24.08	59.25	21.66	16.34	309.17
82.34	11.08	13.61	10.92	10.39	9.01	24.81	60.11	22.57	17.18	262.03
58.37	11.16	9.09	11.43	8.43	9.37	26.21	60.70	24.06	17.01	235.82
102.73	13.79	11.70	11.59	8.48	11.04	32.78	52.40	25.20	12.28	282.00
99.87	11.29	11.76	6.95	9.37	9.63	31.73	45.49	21.66	12.27	260.02
124.09	11.90	11.97	8.81	10.96	11.02	33.04	59.84	25.34	18.29	315.27
87.78	13.96	14.04	9.00	8.43	10.80	25.09	48.51	25.26	21.40	264.27
68.38	15.74	11.20	9.67	11.09	9.51	29.79	49.86	24.88	18.26	248.37
48.65	14.34	11.22	10.18	9.43	11.13	31.13	46.01	25.98	20.34	228.40
76.18	14.00	13.26	8.75	9.11	10.70	28.89	57.72	23.59	21.72	263.91
117.98	12.42	9.49	8.21	11.11	10.01	27.14	52.18	28.36	17.65	294.56
125.95	13.12	9.49	12.58	10.20	10.72	24.96	50.20	26.64	16.00	299.86
128.79	11.85	9.47	7.94	8.85	9.69	29.68	42.15	25.62	11.28	285.33
54.91	13.12	11.37	6.88	9.91	9.19	25.81	52.10	28.70	20.65	232.64
51.13	13.51	11.35	11.35	11.10	10.33	31.36	50.83	23.57	11.26	227.93
124.85	15.15	13.77	7.65	9.16	9.36	33.79	60.64	21.98	21.49	317.85
73.59	13.04	10.93	11.27	8.70	10.36	33.65	53.58	28.66	16.36	260.13
103.81	13.52	9.48	10.75	10.88	10.08	28.39	50.40	25.15	13.75	275.98
105.92	13.28	13.87	12.11	10.08	9.10	32.02	43.51	29.43	14.62	283.94

A	B	C	D	E	F	G	H	I	J	K
45.46	11.22	12.61	7.74	9.50	9.23	21.93	46.80	21.70	16.80	203.00
92.34	12.76	10.55	6.95	9.69	9.31	25.76	54.87	26.74	11.29	260.27
127.81	13.38	12.03	11.14	8.34	8.63	32.90	57.26	29.04	19.23	320.77
54.99	11.11	9.78	7.49	8.78	9.46	31.13	54.70	24.33	17.93	229.70
113.04	12.01	11.56	6.82	8.84	10.15	31.63	45.87	26.09	16.24	282.26
116.62	11.00	12.60	12.79	8.34	9.50	29.85	42.69	24.81	11.13	279.33
117.89	14.76	10.70	11.90	10.36	9.44	27.51	45.41	26.63	18.29	292.89
65.46	13.23	11.60	12.76	9.84	10.53	32.75	57.14	27.39	13.07	253.77
70.98	15.35	9.38	7.53	10.67	10.01	33.05	45.65	27.53	18.45	248.61
77.96	13.07	11.20	7.89	10.19	9.81	22.68	58.78	27.71	11.15	250.45
73.05	11.33	9.44	12.25	10.39	9.33	27.39	56.20	28.19	14.50	252.07
121.87	13.52	10.66	9.91	9.78	9.27	26.26	55.55	27.19	11.20	295.21
65.10	14.34	11.15	11.32	9.10	10.04	26.62	58.39	24.86	17.10	248.02
60.73	15.27	11.36	9.83	10.01	9.23	33.76	50.47	29.08	18.63	248.38
128.34	14.18	14.13	8.57	8.29	9.06	32.96	46.61	22.03	20.58	304.73
56.08	15.23	10.01	13.23	9.98	11.13	28.61	48.58	28.60	15.54	236.99
99.41	15.26	10.19	9.19	8.95	11.17	33.55	55.15	23.80	15.27	281.94
55.63	14.22	12.72	11.00	10.69	9.43	32.54	44.46	25.34	18.67	234.70
110.71	11.66	10.04	8.80	9.56	9.76	30.23	48.12	25.13	16.72	280.72
112.74	11.56	9.39	7.72	10.67	10.35	32.73	42.05	26.49	14.71	278.39
65.00	11.51	9.74	12.61	10.16	9.79	25.73	58.74	28.58	20.59	252.47
87.56	12.95	13.79	9.53	9.40	9.59	27.51	58.87	27.72	19.13	276.05
48.80	15.91	13.53	8.12	10.82	10.70	33.93	44.26	28.46	11.07	225.59
69.75	11.11	11.62	9.86	8.91	10.89	26.15	42.86	26.75	19.69	237.58
122.76	13.00	13.47	12.63	8.50	11.15	31.33	56.34	26.98	18.89	315.05
105.47	15.07	13.02	13.00	9.37	10.27	32.80	44.26	28.81	14.94	287.41
61.77	12.51	11.75	7.36	9.72	10.63	30.28	50.10	21.63	15.87	231.62
79.04	13.62	12.02	7.50	8.45	9.98	24.65	50.97	25.33	13.75	245.32
122.36	12.37	9.27	7.69	8.95	9.62	26.26	45.32	27.24	17.61	286.68
72.93	12.85	12.82	10.26	9.96	9.43	24.09	60.54	28.34	12.37	253.58
71.23	13.97	13.92	9.43	9.69	10.00	21.40	51.01	22.36	21.61	244.61
77.18	13.34	9.55	12.26	9.21	9.70	22.83	48.35	23.07	16.23	241.74
98.82	15.74	13.14	6.84	8.47	10.81	22.80	58.71	29.10	19.91	284.34
134.32	11.77	13.92	13.03	8.43	10.09	26.65	42.26	27.14	12.89	300.50
57.24	12.48	13.63	11.49	11.18	9.85	21.91	46.94	22.36	15.27	222.35
94.23	13.25	12.29	13.01	11.16	9.85	25.91	60.08	27.14	18.81	285.73
111.16	14.65	14.39	9.07	9.97	10.08	31.78	44.54	22.44	13.71	281.78
59.14	15.11	10.72	12.77	8.67	10.54	21.80	50.45	28.22	17.82	235.25
129.03	5.07	12.36	9.64	10.50	10.85	24.66	46.08	27.24	21.60	307.04
63.41	11.91	14.36	9.21	9.55	9.28	31.37	60.80	21.96	19.52	251.36
68.97	12.44	11.66	7.84	9.03	11.23	33.45	58.24	26.04	16.08	254.99
71.25	12.45	12.58	13.02	10.57	9.29	23.36	47.14	28.89	17.16	245.71
121.98	12.05	9.33	10.90	10.43	9.94	27.41	48.31	21.85	11.03	283.23
125.16	11.74	12.79	9.99	10.71	10.92	29.03	43.72	22.83	18.22	295.11
119.89	11.61	13.13	7.13	9.28	9.98	27.32	58.49	23.25	16.32	296.39
75.71	11.20	13.12	12.61	8.46	10.53	26.60	51.15	27.69	17.09	254.15
57.67	14.96	13.87	13.27	10.14	10.96	24.36	59.97	25.13	17.74	248.06
109.68	14.82	12.81	8.51	9.75	9.51	32.07	41.62	26.09	16.12	285.58

A	B	C	D	E	F	G	H	I	J	K
45.38	11.05	9.67	12.20	9.07	9.90	32.17	58.44	22.10	12.43	222.43
65.18	11.05	11.01	10.92	9.00	11.11	25.95	41.26	21.81	20.01	227.29
111.59	14.06	11.47	6.87	8.26	9.13	26.71	57.15	29.36	17.39	291.96
103.43	12.98	11.31	6.86	10.20	10.36	29.07	47.27	28.90	19.67	280.06
86.56	14.53	12.06	10.77	10.79	9.71	21.49	51.79	26.86	21.74	266.30
125.82	14.94	10.32	11.32	10.67	9.59	29.81	52.29	21.96	14.51	301.23
123.18	15.57	11.71	10.32	8.22	11.19	23.07	53.62	28.23	19.49	304.61
54.05	13.12	11.64	12.28	8.37	10.51	30.28	59.10	25.10	12.39	236.86
52.64	14.53	12.67	11.73	10.58	10.40	32.94	41.06	29.23	21.12	236.90
124.75	12.48	11.22	7.15	10.72	11.17	32.77	52.90	22.23	13.36	298.76
103.45	13.82	10.52	9.65	9.83	10.35	25.81	47.49	29.05	14.32	274.29
70.08	14.95	12.26	11.84	10.95	10.53	31.38	50.83	26.02	15.13	253.96
87.37	15.09	13.46	12.99	9.90	10.95	25.15	46.50	27.68	17.28	266.37
93.35	12.83	12.02	8.49	9.00	9.13	33.67	47.22	28.58	15.24	269.54
131.17	15.95	14.12	11.37	11.13	10.62	24.31	44.26	24.81	17.32	305.06
48.58	11.15	13.23	11.14	9.73	11.04	26.14	60.50	24.12	19.49	235.11
125.51	15.29	11.19	11.05	9.79	9.21	24.08	54.54	25.13	15.18	300.97
113.75	15.15	10.27	10.01	9.79	9.42	27.44	45.90	27.36	17.74	286.83
56.95	12.53	12.28	9.23	8.54	10.64	31.10	46.50	29.39	13.21	230.37
122.61	14.92	11.08	13.01	8.59	10.50	25.31	52.54	23.80	11.49	293.83
124.98	11.04	11.92	7.98	10.39	10.95	33.95	52.60	24.55	15.17	303.53
47.90	14.24	9.40	12.98	10.14	10.95	21.82	60.23	25.69	15.01	228.35
73.42	14.66	11.28	10.16	9.85	11.14	21.02	43.45	23.88	20.09	238.95
120.47	11.42	12.70	7.71	10.62	10.65	24.47	56.56	23.87	11.17	289.63
66.43	15.91	13.36	9.21	9.26	10.37	31.91	45.56	25.30	21.48	248.79
134.22	15.46	12.64	12.07	10.51	9.87	31.64	55.27	25.59	19.02	326.29
125.71	11.28	10.12	11.31	9.97	9.02	26.43	59.46	29.24	11.60	304.15
101.66	14.66	11.14	11.42	8.60	9.56	29.60	43.76	21.79	21.13	273.33
68.43	13.30	13.28	11.91	9.36	9.03	23.27	53.82	28.37	12.83	243.62
80.80	12.75	10.45	7.39	9.53	10.29	23.09	55.16	21.73	13.56	244.74
55.69	15.20	10.70	8.30	8.46	10.26	25.62	44.51	26.44	18.23	223.40
130.66	14.13	13.76	11.40	9.25	9.22	33.75	40.52	22.63	13.67	299.00
89.80	14.31	12.95	9.18	8.76	10.60	23.99	55.23	24.50	14.14	263.47
96.17	11.99	12.64	11.13	10.53	11.01	22.09	55.32	27.52	16.02	274.42
96.70	13.36	13.84	9.30	9.06	9.24	23.22	41.90	24.88	15.23	257.33
50.06	14.69	13.84	8.37	9.11	9.90	23.35	51.42	22.57	11.49	215.10
50.42	13.98	9.79	12.24	10.82	10.50	26.29	52.42	27.86	15.34	229.66
116.35	11.27	11.30	11.86	8.71	9.78	21.33	44.79	26.21	15.26	276.86
57.43	12.43	11.58	7.48	8.83	9.32	33.39	49.08	27.01	17.93	234.49
121.03	14.69	12.22	7.99	10.63	9.94	26.33	47.81	27.83	12.11	290.58
96.65	12.96	10.43	11.81	9.65	10.08	31.70	60.07	24.64	21.06	289.03
94.86	11.14	10.50	9.44	9.03	10.21	24.70	49.53	22.54	15.04	256.98
111.75	14.05	11.22	11.70	11.07	10.70	28.60	47.29	28.14	18.41	292.94
100.04	11.30	12.70	10.20	10.93	10.52	32.26	42.00	28.14	21.55	279.64
54.85	12.00	9.96	6.86	8.66	10.16	21.95	53.32	22.91	15.18	215.84
63.68	15.25	11.95	12.61	8.68	10.77	33.32	52.70	29.36	11.66	249.97
92.79	13.80	13.25	8.13	8.41	11.03	30.84	52.84	28.86	20.94	280.88
72.34	12.02	11.40	10.72	10.56	10.72	33.83	42.72	22.55	19.07	245.93

A	B	C	D	E	F	G	H	I	J	K
106.51	11.74	11.05	11.49	11.11	10.31	21.86	28.77	14.22	274.70	274.70
74.56	14.55	13.84	7.94	9.06	11.00	22.37	52.14	26.36	13.07	244.90
49.35	12.33	12.81	11.74	10.43	11.19	29.76	55.39	27.47	15.68	236.17
66.95	14.34	10.89	13.13	9.13	10.85	23.91	49.49	23.62	18.70	241.01
52.35	13.30	10.52	11.03	11.18	10.31	23.77	55.39	26.24	14.62	228.71
58.26	13.92	13.18	11.88	10.01	9.87	22.47	44.85	24.91	14.21	223.56
106.17	13.69	12.48	12.18	10.00	11.07	25.25	60.21	24.39	17.20	292.63
65.21	13.94	9.91	12.97	9.16	10.69	27.92	48.41	29.11	16.15	243.47
54.87	12.08	11.75	7.91	10.37	11.04	32.80	59.91	23.03	14.71	238.47
46.09	11.94	14.29	8.06	10.63	11.15	25.98	58.05	29.12	14.20	229.50
80.49	14.32	13.66	9.56	9.89	10.04	32.78	42.35	26.69	13.48	253.28
63.06	15.23	14.19	7.61	9.51	11.11	23.52	46.78	24.89	18.65	234.56
64.24	12.31	11.23	11.37	10.73	11.09	25.37	60.58	24.17	12.27	243.36
120.37	15.23	10.07	7.50	10.11	9.00	25.69	49.20	24.23	14.29	285.69
72.02	13.09	13.67	12.53	8.46	9.29	28.07	58.79	24.63	11.42	251.98
120.00	14.32	10.89	7.94	10.18	10.37	21.72	60.80	27.38	12.23	295.83
134.16	14.59	9.08	13.23	10.15	9.09	24.46	54.69	25.23	15.49	310.16
95.71	15.98	9.24	7.29	11.11	9.61	24.70	55.65	21.70	11.87	262.86
125.43	14.92	12.19	8.37	10.54	10.37	23.86	43.37	23.05	18.58	290.67
50.39	14.16	13.58	13.28	8.77	9.87	30.99	50.44	24.91	11.18	227.56
122.13	14.39	9.10	11.78	8.46	10.33	22.82	58.74	29.01	20.81	307.57
64.06	15.56	9.08	11.10	9.50	10.36	24.18	51.03	27.97	19.29	242.12
90.32	15.99	13.40	11.44	8.75	10.94	26.52	50.10	27.37	14.65	269.48
132.53	15.73	12.91	11.32	10.18	10.54	33.68	44.06	25.36	17.71	314.04
102.76	13.42	12.08	13.00	9.37	9.21	29.94	48.62	28.97	20.69	288.05
68.92	14.38	10.95	10.51	8.96	10.63	29.44	41.46	24.67	20.89	240.82
94.20	14.75	12.27	9.53	9.60	11.00	30.09	58.32	29.13	20.19	289.09
112.38	11.05	9.20	7.97	9.86	10.30	22.80	47.82	25.17	21.14	277.68
66.30	12.42	12.00	7.16	8.82	10.12	29.17	57.28	25.65	17.26	246.19
130.57	14.03	11.43	7.31	10.35	9.42	30.12	45.41	22.39	19.11	300.14
121.49	15.15	12.94	12.59	8.88	11.18	33.96	42.13	28.02	15.81	302.15
117.16	15.90	12.85	8.62	8.21	10.80	29.95	42.52	24.23	20.62	290.85
52.83	12.84	11.68	12.45	8.99	10.39	30.28	55.49	24.94	14.58	234.46
47.38	15.11	13.59	7.09	10.51	9.59	26.42	41.27	27.95	15.76	214.68
82.78	14.93	10.00	11.05	8.75	10.62	28.68	52.80	28.40	12.18	260.21
115.52	15.89	13.52	7.09	8.84	9.15	22.49	59.27	28.16	14.35	294.27
95.39	15.04	11.54	10.26	8.78	9.30	31.45	42.44	25.76	15.48	265.45
99.83	12.21	10.65	7.25	9.37	10.68	31.48	54.75	27.61	12.96	253.50
127.17	11.47	12.08	7.74	8.93	11.24	33.60	53.98	24.54	13.05	302.40
58.66	15.98	14.27	7.22	9.21	9.92	28.79	58.90	26.99	17.22	260.14
133.72	12.93	11.54	10.31	8.79	10.19	29.90	58.85	29.43	14.88	320.55
81.51	13.13	9.26	9.83	8.49	10.80	21.55	58.57	27.41	12.96	253.50
129.83	11.41	13.22	11.79	10.15	11.09	27.27	49.20	25.37	13.15	303.90
87.56	13.61	12.03	7.81	9.88	9.85	21.45	55.38	25.36	12.96	241.94
78.91	15.80	10.53	10.49	10.08	10.85	22.15	47.10	23.06	11.33	271.77
87.10	14.59	12.17	10.83	10.42	10.22	33.15	60.01	21.93	22.36	300.68
129.12	15.50	9.66	9.28	11.00	10.52	23.68	51.23	22.36	18.33	231.78
68.54	15.96	10.26	9.26	10.94	10.64	23.87	44.37	22.45	15.49	

A	B	C	D	E	F	G	H	I	J	K
79.52	11.58	13.55	10.15	11.14	9.88	22.38	56.25	28.41	20.39	263.26
133.78	11.50	9.30	11.85	8.75	10.93	24.32	47.05	23.91	12.45	293.84
80.03	12.93	12.74	11.65	9.00	10.00	22.42	47.10	23.16	15.03	244.06
109.75	14.18	9.01	8.37	8.77	10.14	29.15	49.08	28.38	11.60	278.43
115.20	14.72	10.52	12.03	8.95	9.27	33.75	56.86	21.93	14.69	297.92
85.50	11.89	10.25	7.22	10.11	10.92	31.42	60.23	25.69	11.17	264.39
102.02	15.56	11.16	11.91	9.03	9.28	31.06	54.84	22.66	21.52	289.14
116.59	11.83	12.15	8.46	10.80	11.23	22.64	42.91	25.11	11.25	272.97
101.79	11.68	13.50	9.81	9.57	9.23	23.69	45.44	23.35	12.32	260.38
127.50	13.78	12.36	10.93	10.95	10.92	28.51	42.87	24.26	17.48	299.55
59.87	11.21	10.13	12.26	8.59	10.63	29.85	54.76	28.84	15.36	241.48
105.25	15.00	12.79	8.58	9.01	10.74	22.11	60.02	21.99	11.41	276.89
125.16	13.64	9.73	13.24	9.08	9.86	27.37	53.46	24.64	17.72	303.91
50.06	14.31	9.90	11.43	9.14	10.76	24.78	44.49	27.11	11.52	213.49
105.32	13.70	14.39	11.91	11.12	10.13	32.39	48.98	23.73	19.70	291.36
116.52	11.21	9.10	10.46	9.33	11.01	33.72	51.73	23.88	11.37	288.32

**A.3****RECEIPT NOT DUE-IN**

The following pages contain the raw data collected during the process flow/time and motion effort for the receipt with no due-in process. The process flow is depicted in Section 6, Figure 6-3. Since receipt processing steps are constant until the transaction is input at the SBSS terminal, the chart begins with the output of a 356 reject (receipt not due-in). A composite of the raw data collected for the process is provided in Section 6, Table 6-3. Raw data displayed represent actual times captured (in seconds) for each observed occurrence of the process (rows) and correlate to individual process steps (columns) as follows:

<u>Column</u>	<u>Process Step</u>
<b>A</b>	Review bill of lading/shipping documentation
<b>B</b>	Unload property/materiel
<b>C</b>	Separate materiel by requisition priority
<b>D</b>	Separate materiel by size
<b>E</b>	Assign temporary location (tote box/pallet)
<b>F</b>	Sign receipt documentation
<b>G</b>	Take receipt to input terminal
<b>H</b>	Input/process receipt — (output 356 reject notice)
<b>I</b>	Compare document/requisition numbers
<b>J</b>	Run transaction history
<b>K</b>	Research/review transaction history
<b>L</b>	Process REC/SPR — TEX J/I
<b>M</b>	Return to materiel
<b>N</b>	Attach DD 1348/DOR — take/move materiel to storage and issue
<b>O</b>	Forward all documentation to document control
<b>P</b>	Composite/total of all process steps

	Receipt - No Due-In Detail															
	P	O	N	M	L	K	J	I	H	G	F	E	D	C	B	A
51.70	12.78	13.07	12.40	8.50	9.18	26.64	40.11	14.16	78.96	162.40	24.98	20.77	15.10	11.92	502.67	
92.93	15.64	13.02	9.94	8.51	10.58	33.61	44.70	12.05	78.47	170.18	25.53	23.65	17.84	9.73	566.38	
82.08	15.96	13.54	6.92	10.88	9.20	26.09	44.00	14.45	79.18	203.49	28.02	25.89	11.02	10.51	581.23	
70.41	15.70	14.29	7.03	8.84	10.54	28.36	42.75	12.79	81.84	272.49	23.91	23.54	18.91	9.02	640.62	
121.78	15.35	12.11	10.35	8.67	10.33	23.04	49.63	11.84	65.97	297.17	28.53	24.93	17.23	11.47	708.39	
124.01	14.91	9.93	12.33	8.77	10.88	33.55	52.62	12.76	68.24	213.18	21.83	21.47	17.26	11.50	633.24	
110.78	12.21	9.46	9.64	8.44	10.67	26.57	42.89	13.44	69.37	202.54	38.21	21.29	21.11	11.38	608.01	
114.84	13.09	9.15	7.49	8.40	9.30	32.25	60.54	12.41	78.62	231.80	41.01	24.91	21.13	12.23	677.17	
52.21	13.77	9.04	7.74	9.52	10.63	31.07	41.77	12.78	71.25	210.56	39.50	21.10	16.77	11.67	559.38	
118.71	11.17	11.87	11.18	8.30	10.83	22.07	57.13	14.25	67.73	170.80	38.40	26.40	16.37	10.66	595.87	
115.41	14.14	11.71	8.72	9.36	10.39	27.87	44.18	13.34	79.65	208.91	23.05	20.92	16.03	9.60	613.30	
52.79	14.15	14.28	9.80	9.39	10.00	22.81	40.27	12.09	73.25	171.87	31.53	22.42	21.63	8.81	515.09	
126.75	12.10	9.50	12.01	10.95	10.15	31.68	49.45	13.85	69.62	297.69	37.99	21.66	19.51	12.59	735.50	
68.09	13.19	11.50	9.36	10.69	10.21	31.27	41.90	12.21	72.28	148.37	40.15	26.50	17.14	10.43	523.29	
104.55	15.00	13.85	10.57	9.38	11.22	22.20	58.31	14.51	75.52	142.03	23.55	24.07	19.51	12.19	556.45	
119.35	14.59	11.79	10.41	9.63	9.57	26.64	58.84	13.62	81.22	220.25	40.54	23.22	13.91	11.52	665.12	
96.50	16.00	11.10	8.09	9.47	10.21	30.27	54.04	13.49	75.83	280.07	35.47	21.89	18.99	12.89	694.31	
112.08	15.19	13.68	11.10	8.26	9.38	21.92	52.93	11.84	82.90	196.60	27.31	21.12	19.80	13.15	617.25	
86.54	14.59	11.45	11.75	10.16	10.85	32.52	46.00	14.66	81.35	218.65	26.62	25.81	13.77	11.89	616.62	
111.15	11.58	13.42	12.70	8.57	9.01	29.73	43.46	12.75	66.91	172.42	31.78	23.57	14.29	9.19	570.52	
102.79	14.40	9.97	11.22	10.00	10.45	32.83	49.56	12.62	69.57	296.37	27.37	20.72	19.33	10.41	697.61	
76.22	13.91	12.68	9.61	8.48	10.35	27.09	52.66	13.85	78.52	276.92	37.57	26.12	17.15	13.16	674.29	
82.27	11.72	10.55	12.86	9.99	9.92	22.59	54.72	14.22	82.62	167.90	28.03	25.65	18.13	12.87	564.05	
51.80	15.53	9.81	12.18	9.13	9.75	31.62	52.65	13.23	68.08	217.59	37.52	24.21	18.60	10.97	582.66	
92.90	11.69	12.97	11.83	10.68	10.71	26.73	42.24	12.08	67.23	255.15	29.02	23.95	15.82	10.18	633.17	
115.82	14.60	13.88	6.91	9.22	10.11	33.06	41.04	12.03	79.35	243.75	22.14	23.47	21.61	11.70	658.69	
120.29	13.77	10.51	7.66	10.29	10.82	31.65	45.76	11.84	78.00	150.93	29.83	21.84	18.13	12.87	572.47	
124.27	15.75	12.15	12.78	8.26	10.83	33.05	51.64	12.74	81.07	192.17	31.46	23.52	18.68	12.52	640.89	
109.99	14.35	13.19	8.70	9.05	9.25	26.75	46.10	14.12	79.55	271.68	30.20	25.75	19.93	12.92	691.50	
116.79	15.74	10.90	7.19	9.83	11.15	21.62	53.29	11.68	80.08	247.45	29.60	21.49	20.81	13.17	670.79	
134.64	11.58	11.92	11.21	9.89	9.52	32.09	51.45	14.71	73.96	147.64	31.84	20.95	15.71	10.57	587.66	
70.63	15.44	12.45	7.52	9.09	10.49	28.36	44.96	12.93	69.43	172.47	40.61	26.43	16.07	10.75	547.63	
132.93	12.31	13.36	8.13	9.59	10.22	33.36	56.91	13.06	77.19	242.34	28.58	26.29	16.60	12.62	693.49	
61.73	14.62	12.25	9.52	8.73	9.98	28.76	45.15	14.35	73.33	256.10	34.45	24.85	20.99	11.97	626.79	
74.66	15.48	13.38	9.72	10.62	10.37	28.83	40.82	14.27	76.32	161.63	23.98	21.74	17.97	9.64	529.42	
100.13	15.79	13.39	8.23	11.01	10.55	26.26	50.35	11.84	72.81	304.25	40.23	25.01	19.31	13.13	722.29	
124.71	12.55	10.45	8.47	9.16	10.75	31.77	40.06	12.65	74.94	241.48	36.74	25.51	15.54	9.54	664.35	
52.58	11.95	10.34	9.35	9.40	11.01	33.54	60.55	13.65	78.94	149.52	40.30	21.19	18.87	11.03	532.19	
66.37	15.35	9.49	13.11	10.40	11.09	25.29	41.35	13.34	78.99	253.63	26.00	21.25	20.36	12.58	618.59	
47.57	11.00	11.46	9.57	9.36	10.95	22.51	49.58	13.78	77.75	220.28	38.88	26.34	25.01	19.31	579.41	
98.92	12.70	11.80	10.06	8.86	9.94	30.32	58.22	12.93	79.29	221.78	41.37	25.71	19.20	12.27	653.39	
95.74	12.24	10.48	11.24	8.37	11.25	22.72	41.54	13.30	82.37	254.90	34.50	26.47	17.25	9.41	651.78	
118.29	15.23	10.70	12.33	9.42	10.49	31.82	42.28	12.31	76.40	148.51	29.73	22.27	11.82	12.58	564.17	
66.75	11.06	12.68	10.77	9.98	9.09	32.13	56.35	14.53	69.97	298.84	32.52	26.15	14.40	13.15	678.38	

<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>G</b>	<b>H</b>	<b>I</b>	<b>J</b>	<b>K</b>	<b>L</b>	<b>M</b>	<b>N</b>	<b>O</b>	<b>P</b>
81.34	13.25	11.41	10.50	10.65	9.90	28.24	49.47	13.76	67.41	257.29	24.23	22.08	20.61	12.97	633.12
63.32	12.08	13.57	7.34	9.72	11.03	25.30	58.90	14.69	80.30	158.74	31.07	22.19	17.84	10.29	536.36
125.89	13.24	9.94	10.99	8.28	10.19	30.34	44.80	14.57	65.39	223.90	36.79	25.90	15.55	11.87	647.64
46.56	14.51	11.93	11.29	10.70	10.27	31.61	58.48	13.38	74.32	181.22	37.89	22.79	12.13	9.41	546.47
78.96	15.14	12.97	10.97	10.44	9.92	32.74	43.30	11.79	81.16	198.41	25.18	24.26	20.15	9.44	584.82
116.13	12.14	12.52	12.62	10.50	9.77	21.02	44.61	14.16	77.18	237.81	26.41	21.49	16.53	8.74	641.65
81.28	11.80	13.70	12.36	8.37	10.61	30.22	45.44	13.87	67.30	279.71	32.62	25.11	21.20	12.28	665.86
124.65	14.19	9.11	8.54	9.59	9.55	29.12	56.84	13.58	78.02	273.44	34.06	23.57	20.79	12.43	717.47
99.69	12.44	12.28	10.60	8.28	9.67	27.08	57.62	14.28	65.73	275.08	37.95	26.17	18.32	8.93	684.14
71.96	12.17	12.18	10.76	8.68	9.70	24.55	50.52	13.42	75.63	292.25	31.10	24.82	18.06	9.84	665.63
111.04	12.14	13.13	7.34	8.62	10.47	23.80	40.58	11.85	76.97	199.69	33.51	26.00	21.16	13.12	609.42

#### A.4 MICAP RECEIPT PROCESSING

The following pages contain the raw data collected during the process flow/time and motion effort for the MICAP receipt process. The process flow is depicted in Section 6, Figure 6-4. A composite of the raw data collected for the process is provided in Section 6, Table 6-4. Raw data displayed represent actual times captured (in seconds) for each observed occurrence of the process (rows) and correlate to individual process steps (columns) as follows:

<u>Column</u>	<u>Process Step</u>
A	Review bill of lading/shipping documentation
B	Unload property/materiel
C	Separate materiel by requisition priority
D	Separate materiel by size
E	Assign temporary location (tote box/pallet)
F	Sign receipt documentation
G	Take receipt to input terminal
H	Input/process receipt
I	Return to materiel
J	Attach DD 1348/DOR
K	Stamp DOR with MICAP delivery priority
L	Take/move materiel to pick-up and delivery
M	Time stamp document
N	Enter in MICAP control log
O	Forward documents to document control
P	Composite/total of all process steps

Receipt / MICAP Due-In		P	O	N	M	L	K	J	I	H	G	F	E	D	C	B	A
51.70	12.78	13.07	12.40	8.50	9.18	26.64	40.11	29.02	15.10	4.94	40.14	4.56	15.03	10.47	293.63	378.34	
92.93	15.64	13.02	9.94	8.51	10.58	33.61	60.41	31.81	17.84	4.57	48.57	4.56	14.73	11.62	378.34	345.26	
82.08	15.96	13.54	6.92	10.88	9.20	26.09	57.87	31.55	11.02	4.80	43.34	4.31	17.42	10.29	345.26	334.24	
70.41	15.70	14.29	7.03	8.84	10.54	28.36	47.47	33.80	18.91	4.88	40.26	4.65	16.74	12.35	334.24	334.24	
121.78	15.35	12.11	10.35	8.67	10.33	23.04	57.23	29.01	17.23	4.52	48.18	4.56	18.27	10.11	390.72	390.72	
124.01	14.91	9.93	12.33	8.77	10.88	33.55	52.62	31.33	17.26	4.84	38.85	4.28	17.35	10.71	391.61	391.61	
110.78	12.21	9.46	8.44	10.67	26.57	42.89	34.13	21.11	4.87	43.80	4.80	14.82	10.75	364.94	364.94		
114.84	13.09	9.15	7.49	8.40	9.30	32.25	60.54	32.46	21.13	4.88	43.48	4.53	18.86	10.68	391.08	391.08	
52.21	13.77	9.04	7.74	9.52	10.63	31.07	41.77	32.51	16.77	4.79	41.47	4.60	17.66	10.69	304.26	304.26	
118.71	11.17	11.87	11.18	8.30	10.83	22.07	57.13	34.61	16.37	4.69	44.23	4.64	16.31	10.31	382.42	382.42	
115.41	14.14	11.71	8.72	9.36	10.39	27.87	44.18	30.89	16.03	4.90	39.41	4.58	14.73	11.99	364.32	364.32	
52.79	14.15	14.28	9.80	9.39	10.00	22.81	40.27	31.32	21.63	4.84	43.28	4.62	16.58	12.78	308.55	308.55	
126.75	12.10	9.50	12.01	10.95	10.15	31.68	49.45	28.58	19.51	4.79	47.42	4.41	18.35	12.09	397.74	397.74	
68.09	13.19	11.50	9.36	10.69	10.21	31.27	41.90	32.25	17.14	4.41	41.34	4.69	17.55	12.50	326.08	326.08	
104.55	15.00	13.85	10.57	9.38	11.22	22.20	58.31	29.46	19.51	4.81	48.24	4.33	15.36	12.86	379.64	379.64	
119.35	14.59	11.79	10.41	9.63	9.57	26.64	58.84	31.34	13.91	4.88	49.55	4.43	17.36	12.81	395.10	395.10	
96.50	16.00	11.10	8.09	9.47	10.21	30.27	54.04	31.47	18.99	4.58	42.17	4.86	16.55	12.10	366.41	366.41	
112.08	15.19	13.68	11.10	8.26	9.38	21.92	52.93	31.94	19.80	4.74	38.37	4.85	16.32	10.18	370.75	370.75	
86.54	14.59	11.45	11.75	10.16	10.85	32.52	46.00	32.74	13.77	4.77	39.17	4.69	16.40	12.29	347.70	347.70	
111.15	11.58	13.42	12.70	8.57	9.01	29.73	43.46	28.67	14.29	4.85	47.04	4.31	15.05	12.34	366.17	366.17	
102.79	14.40	9.97	11.22	10.00	10.45	32.83	49.56	28.68	19.33	4.64	38.46	4.71	18.10	10.59	365.73	365.73	
76.22	13.91	12.68	9.61	8.48	10.35	27.09	52.66	28.78	17.15	4.92	41.55	4.35	17.69	10.46	335.90	335.90	
82.27	11.72	10.55	12.86	9.99	9.92	22.59	54.72	32.01	18.13	4.65	44.66	4.62	16.02	11.02	345.73	345.73	
51.80	15.53	9.81	12.18	9.13	9.75	31.62	52.65	29.04	18.60	4.64	50.49	4.55	16.98	12.55	329.30	329.30	
92.90	11.69	12.97	11.83	10.68	10.71	26.73	42.24	30.75	15.82	4.80	49.00	4.45	18.95	10.09	353.61	353.61	
115.82	14.60	13.88	6.91	9.22	10.11	33.06	41.04	34.03	21.61	4.60	44.79	4.80	18.20	12.64	385.30	385.30	
120.29	13.77	10.51	7.66	10.29	10.82	31.65	45.76	31.43	18.79	4.79	38.26	4.65	15.61	12.28	376.54	376.54	
124.27	15.75	12.15	12.78	8.26	10.83	33.05	51.64	31.11	18.68	4.64	48.83	4.83	17.12	12.05	406.01	406.01	
109.99	14.35	13.19	8.70	9.05	9.25	26.75	46.10	29.48	19.93	4.71	37.30	4.33	18.58	12.56	364.24	364.24	
116.79	15.74	10.90	7.19	9.83	11.15	21.62	53.29	31.67	20.81	4.61	44.11	4.83	15.21	11.00	378.73	378.73	
134.64	11.58	11.92	11.21	9.89	9.52	32.09	51.45	31.53	15.71	4.74	38.22	4.70	18.98	12.24	398.41	398.41	
70.63	15.44	12.45	7.52	9.09	10.49	28.36	44.96	34.22	16.07	4.72	43.72	4.62	15.39	12.60	330.28	330.28	
132.93	12.31	13.36	8.13	9.59	10.22	33.36	56.91	31.21	16.60	4.54	46.51	4.26	16.92	10.91	407.77	407.77	
61.73	14.62	12.25	9.52	8.73	9.98	28.76	45.15	31.81	20.99	4.46	38.42	4.36	15.46	11.51	317.76	317.76	
74.66	15.48	13.38	9.72	10.62	10.37	28.83	40.82	32.55	17.97	4.56	49.83	4.46	17.79	10.89	341.92	341.92	
100.13	15.79	13.39	8.23	11.01	10.55	26.26	50.35	29.62	19.31	4.55	38.34	4.39	16.04	11.51	359.47	359.47	
98.92	12.70	11.80	10.06	8.86	9.94	30.32	58.22	34.75	19.20	4.83	41.64	4.25	18.47	10.36	373.98	373.98	
52.58	11.95	10.34	9.35	11.01	33.54	60.55	28.96	18.87	4.77	45.65	4.44	15.62	11.30	328.31	328.31		
66.37	15.35	9.49	13.11	10.40	11.09	25.29	41.35	33.00	20.36	4.54	46.36	4.65	14.85	11.77	327.97	327.97	
47.57	11.00	11.46	9.57	9.36	10.95	22.51	49.58	29.58	17.89	4.92	41.31	4.51	15.89	11.30	297.38	297.38	
95.74	12.24	10.48	8.37	11.25	22.72	41.54	28.82	17.25	4.59	45.95	4.32	17.58	11.00	343.09	343.09		
118.29	15.23	10.70	12.33	9.42	10.49	31.82	42.28	33.10	11.82	4.55	39.49	4.46	15.20	10.76	369.93	369.93	
66.75	11.06	12.68	10.77	9.98	9.09	32.13	56.35	30.56	14.40	4.49	38.79	4.64	14.80	10.45	326.94	326.94	
81.34	13.25	11.41	10.50	10.65	9.90	28.24	49.47	34.17	20.61	4.57	48.22	4.65	15.12	10.33	352.43	352.43	

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
63.32	12.08	13.57	7.34	9.72	11.03	25.30	58.90	29.03	17.84	4.60	42.36	4.44	12.71	329.32	
125.89	13.24	9.94	10.99	8.28	10.19	30.34	44.80	29.11	15.55	4.82	45.94	4.52	17.49	362.56	
46.56	14.51	11.93	11.29	10.70	10.27	31.61	58.48	33.85	12.13	4.49	46.47	4.59	15.39	323.47	
78.96	15.14	12.97	10.44	9.92	32.74	43.30	33.58	20.15	4.74	37.81	4.56	15.11	341.96	341.96	
116.13	12.14	12.52	12.62	10.50	9.77	21.02	44.61	31.79	16.53	4.63	37.03	4.36	17.60	362.64	
81.28	11.80	13.70	12.36	8.37	10.61	30.22	45.44	29.23	21.20	4.50	47.22	4.81	14.93	347.99	
124.65	14.19	9.11	8.54	9.59	9.55	29.12	56.84	34.73	20.79	4.86	46.93	4.51	14.80	399.97	
99.69	12.44	12.28	10.60	8.28	9.67	27.08	57.62	29.83	18.32	4.88	46.59	4.56	15.50	368.89	
71.96	12.17	12.18	10.76	8.68	9.70	24.55	50.52	32.10	18.06	4.61	37.98	4.48	16.78	325.48	
111.04	12.14	13.13	7.34	8.62	10.47	23.80	40.58	34.20	21.16	4.81	49.99	4.44	18.03	372.41	
45.38	15.49	9.77	10.04	11.16	9.47	30.13	40.88	32.85	19.11	4.87	50.24	4.39	18.33	9.97	
58.44	15.29	11.95	9.97	9.26	10.80	23.75	60.88	32.48	11.45	4.61	44.07	4.42	15.78	323.87	
72.73	14.54	13.67	12.76	9.12	10.81	26.80	40.48	30.74	15.37	4.84	46.30	4.40	16.56	329.21	
110.08	13.38	13.55	11.38	8.26	10.62	28.27	53.15	32.59	14.77	4.47	43.87	4.62	16.84	377.15	
62.98	12.50	12.41	11.16	8.41	9.54	25.40	41.01	29.90	17.26	4.82	42.00	4.44	17.36	309.87	
132.81	14.81	12.04	11.48	8.62	10.09	25.86	60.28	29.34	20.12	4.46	40.33	4.74	17.16	12.25	
48.18	11.03	11.93	11.65	9.41	9.62	30.98	45.64	31.17	18.52	4.68	50.71	4.80	15.09	12.12	
130.83	12.33	12.66	8.62	9.16	9.90	21.98	55.91	34.08	16.27	4.53	40.40	4.29	14.96	11.73	
92.11	12.19	14.07	9.52	9.84	9.35	25.82	40.67	34.22	16.71	4.39	41.40	4.48	17.14	12.31	
108.88	12.90	12.18	6.97	8.93	9.76	25.40	48.52	31.57	11.37	4.86	45.85	4.46	16.23	12.70	
78.83	11.69	9.70	13.26	10.45	10.41	29.81	49.11	31.40	13.41	4.60	42.36	4.34	17.28	12.05	
52.50	12.87	10.21	11.87	11.06	9.88	30.34	44.76	33.79	20.27	4.46	39.31	4.82	17.14	10.44	
114.43	13.94	12.54	10.87	8.62	10.63	26.71	60.93	32.00	18.39	4.76	41.93	4.39	15.96	11.81	
105.42	14.25	14.06	12.23	8.31	10.18	25.27	45.57	31.47	21.42	4.44	50.72	4.67	18.81	12.04	
59.86	12.31	11.43	10.23	10.35	10.26	21.08	60.67	28.78	17.84	4.60	46.37	4.80	16.16	10.09	
49.17	14.20	10.24	11.66	8.95	10.57	26.80	52.67	29.55	13.74	4.73	39.64	4.71	17.12	11.47	
104.90	14.06	10.70	6.89	10.87	9.97	23.09	43.62	34.22	18.56	4.58	44.57	4.35	18.30	131.72	
113.60	14.65	13.48	10.19	9.80	10.78	23.95	43.03	31.48	21.74	4.44	42.83	4.74	15.16	12.79	
106.40	13.55	12.28	7.76	9.94	10.15	27.88	48.28	32.87	14.74	4.77	47.12	4.89	15.99	10.59	
79.77	11.66	13.39	9.53	9.00	9.84	33.65	52.42	29.17	15.14	4.45	44.42	4.86	18.79	12.09	
101.29	14.82	12.07	7.45	9.36	9.32	30.36	43.75	30.14	17.61	4.40	43.71	4.50	15.80	12.18	
46.62	12.71	11.68	9.17	8.87	11.08	30.77	54.29	34.31	15.37	4.57	38.31	4.51	18.67	11.91	
113.24	13.16	11.70	9.91	10.42	10.97	30.69	54.53	33.40	20.46	4.85	37.96	4.85	14.83	13.00	
77.19	14.91	11.63	7.11	8.87	9.84	21.82	48.24	32.77	13.00	4.77	39.66	4.78	14.84	10.53	
88.58	12.53	9.05	10.62	10.08	10.35	22.83	55.47	34.07	17.77	4.65	49.18	4.65	18.45	12.39	
60.63	12.68	12.80	7.39	8.97	9.72	26.77	47.72	30.74	15.08	4.64	50.76	4.44	17.50	10.26	
87.95	15.87	14.09	6.83	9.74	10.79	27.35	45.56	29.74	15.11	4.84	38.90	4.50	18.37	10.87	
104.00	15.12	11.18	8.91	10.78	10.39	10.44	23.33	51.21	31.89	21.33	4.91	47.44	4.63	15.76	10.99
54.42	15.73	11.75	12.04	8.29	9.19	24.02	46.72	31.91	17.82	4.51	46.54	4.76	17.35	12.81	
68.70	13.81	11.51	11.48	10.45	10.80	33.78	47.83	30.09	18.42	4.44	50.84	4.79	16.69	10.99	
50.71	15.65	10.38	11.83	11.13	10.20	26.79	59.48	29.92	11.29	4.63	42.41	4.74	17.20	10.72	
124.23	12.63	11.09	9.76	10.39	10.44	23.33	49.82	33.86	20.35	4.63	45.35	4.29	16.19	11.24	
83.50	13.93	14.29	9.26	9.41	10.98	25.70	40.21	31.65	15.99	4.52	45.99	4.66	14.79	12.10	
48.74	12.09	13.13	12.97	9.71	9.42	29.13	55.09	33.18	15.19	4.87	46.17	4.50	15.58	10.72	
106.42	15.36	12.26	7.02	10.82	9.76	21.46	55.04	32.66	12.41	4.58	46.36	4.77	16.32	11.63	
101.13	12.99	9.72	11.41	10.63	9.69	22.79	46.14	28.64	20.60	4.52	40.18	4.89	18.71	12.15	
60.27	15.90	10.09	8.04	10.01	11.20	29.60	52.36	33.10	12.19	4.64	41.51	4.32	17.38	10.73	
48.45	14.98	10.20	9.11	10.06	10.17	26.98	43.55	33.77	14.39	4.52	43.04	4.65	16.65	12.01	

		P	O	N	M	L	K	J	I	H	G	F	E	D	C	B	A
370.96			12.35	17.40	4.81	50.60	4.93	18.33	30.27	53.87	28.39	10.97	9.97	10.32	10.23	11.50	97.03
342.77			10.25	17.66	4.41	42.27	4.81	16.99	33.49	40.04	9.11	10.52	11.26	12.16	10.01	14.28	85.74
323.34			12.86	15.58	4.28	49.03	4.84	15.94	34.45	41.92	9.72	11.25	11.77	12.26	11.46	62.59	55.03
303.54			12.03	18.91	4.35	37.87	4.82	11.28	47.38	50.37	9.87	11.91	11.92	12.14	11.03	59.03	69.83
326.94			10.50	19.03	4.87	42.21	4.52	14.38	33.19	47.82	10.08	23.35	10.08	9.68	12.14	12.11	13.24
322.40			12.20	14.92	4.32	48.96	4.66	16.99	31.59	49.94	10.28	31.72	11.31	8.83	11.31	11.89	54.87
374.48			12.08	18.72	4.63	50.49	4.67	12.55	31.34	40.94	9.13	10.26	11.69	10.23	14.90	118.71	82.33
363.93			11.12	18.59	4.77	44.20	4.58	21.72	34.31	59.94	10.38	10.84	10.82	9.87	11.91	55.57	90.57
344.20			12.76	16.11	4.70	40.25	4.68	19.53	30.46	46.30	11.03	11.04	11.19	8.19	9.62	12.11	12.24
336.82			12.46	16.11	4.72	42.48	4.68	11.29	30.34	56.30	9.46	22.42	10.69	12.62	11.38	48.95	64.86
315.92			11.75	18.86	4.80	45.49	4.80	17.67	44.6	55.64	10.71	29.09	11.03	10.95	14.20	14.20	54.87
325.23			10.48	17.77	4.89	39.02	4.90	15.04	30.10	56.44	10.46	25.50	11.11	10.03	11.31	9.93	130.54
344.54			12.84	17.86	4.84	49.33	4.88	16.52	30.58	40.20	9.35	10.80	10.82	9.35	10.26	12.66	112.87
356.63			12.36	18.36	4.53	45.74	4.66	21.56	31.14	45.23	10.84	10.82	10.38	9.87	11.65	11.65	82.33
369.27			10.61	18.91	4.26	42.43	4.83	12.65	28.94	59.29	10.08	25.31	10.08	10.88	8.76	78.55	59.77
320.46			10.15	15.09	4.72	38.18	4.77	12.15	31.19	43.74	10.06	21.27	10.66	10.46	9.46	61.04	87.91
402.71			12.76	17.29	4.82	37.46	4.61	15.23	34.26	51.76	9.35	29.63	9.12	10.69	8.24	99.90	111.57
393.82			10.61	18.47	4.83	47.80	4.51	14.80	34.26	51.76	9.35	29.63	9.12	10.69	8.24	12.62	15.22
331.72			10.85	17.88	4.46	39.58	4.91	17.18	28.79	49.33	9.73	22.48	10.59	10.88	8.76	125.27	125.27
377.63			11.12	16.68	4.34	48.56	4.73	14.89	28.64	42.31	10.24	28.08	10.64	10.46	9.56	13.43	59.77
336.03			10.98	17.77	4.89	39.02	4.90	16.52	30.58	40.20	9.58	22.02	10.16	10.71	9.66	12.24	123.39
402.71			12.85	17.86	4.84	49.33	4.88	16.52	30.58	40.20	9.35	22.02	10.16	10.71	9.66	126.25	126.25
393.82			12.76	17.29	4.82	47.80	4.51	14.80	34.26	51.76	9.12	29.63	9.01	10.36	9.90	127.11	127.11
331.72			10.61	18.47	4.83	47.80	4.51	14.80	34.26	51.76	9.12	29.63	9.01	10.36	9.90	124.60	124.60
334.68			11.00	17.88	4.46	39.58	4.91	17.18	28.79	49.33	9.73	22.48	10.59	10.88	8.76	124.60	124.60
373.69			12.81	18.09	4.59	40.33	4.73	14.89	28.64	42.31	10.24	28.08	10.64	10.46	9.56	13.20	66.85
357.62			12.55	15.10	4.31	49.47	4.73	13.49	30.93	53.24	10.91	24.28	11.17	11.11	10.91	12.24	9.37
399.18			10.98	18.34	4.80	40.28	4.76	16.34	32.50	59.25	9.90	24.08	11.06	11.06	9.90	12.24	123.39
356.87			11.82	17.99	4.92	39.08	4.84	18.49	29.47	40.78	8.23	10.13	10.23	11.23	8.23	10.39	14.87
379.33			11.91	18.34	4.28	43.24	4.44	11.02	34.39	56.54	10.47	9.55	10.36	9.90	12.63	12.71	112.41
322.76			11.45	17.82	4.45	42.79	4.72	17.01	34.39	56.54	10.36	9.90	10.39	9.90	11.43	13.29	80.78
326.61			12.31	18.19	4.90	43.10	4.62	13.49	30.93	53.21	9.28	21.67	10.47	10.47	9.88	11.54	88.24
362.00			12.12	17.69	4.55	50.35	4.80	18.34	39.08	49.33	9.37	22.48	10.47	10.47	9.88	11.54	131.05
401.06			10.23	18.44	4.80	45.90	4.85	17.18	32.52	49.24	10.47	9.55	10.36	9.90	10.36	10.36	82.34
360.59			11.41	18.96	4.48	48.98	4.80	18.49	29.47	43.56	9.89	22.48	10.47	10.47	9.88	11.54	58.37
387.30			10.52	18.97	4.31	43.29	4.85	18.26	30.93	49.86	9.51	26.21	10.30	10.30	9.88	11.54	102.73
373.64			12.35	18.16	4.59	44.06	4.85	18.26	30.93	49.86	9.51	26.21	10.30	10.30	9.88	11.54	48.65
322.32			11.15	14.94	4.32	45.35	4.62	20.65	32.01	47.82	11.06	24.08	10.90	10.90	9.90	12.26	76.18
310.64			10.73	17.46	4.76	40.00	4.75	11.26	31.36	59.84	11.02	27.14	11.11	10.91	8.81	11.97	124.42
408.63			12.09	16.75	4.56	41.24	4.72	21.49	32.47	50.20	10.72	24.96	10.20	10.20	9.67	11.77	125.95
347.89			11.90	17.54	4.85	44.07	4.79	16.36	33.47	53.58	9.51	29.68	9.69	9.69	8.85	11.22	128.79
373.64			11.61	15.22	4.43	40.54	4.58	29.83	30.33	52.10	10.75	27.89	10.88	10.88	9.86	11.37	54.91
361.98			11.11	16.54	4.33	39.16	4.76	14.62	31.57	52.10	9.10	32.02	10.08	10.08	9.23	12.11	13.28
303.75			12.98	17.35	4.42	50.23	4.66	16.80	33.02	46.80	9.50	21.93	9.23	9.23	7.74	12.61	45.46

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
92.34	12.76	10.55	6.95	9.69	9.31	25.76	54.87	30.78	11.29	4.49	41.27	4.38	17.17	341.98	
127.81	13.38	12.03	11.14	8.34	9.63	32.90	57.26	29.57	19.23	4.55	37.37	4.50	17.10	12.06	
54.99	11.11	9.78	7.49	8.78	9.46	31.13	54.70	30.58	17.93	4.75	42.05	4.50	18.50	11.95	
113.04	12.01	11.56	6.82	8.84	10.15	31.63	45.87	34.68	16.24	4.93	38.14	4.77	14.79	10.90	
116.62	11.00	12.60	12.79	8.34	9.50	29.85	42.69	29.09	11.13	4.71	45.04	4.56	15.29	11.92	
117.89	14.76	10.70	11.90	10.36	9.44	27.51	45.41	29.33	18.29	4.75	41.05	4.40	17.81	11.85	
65.46	13.23	11.60	12.76	9.84	10.53	32.75	57.14	31.46	13.07	4.83	45.39	4.37	18.72	12.26	
70.98	15.35	9.38	7.53	10.67	10.01	30.05	45.65	30.70	18.45	4.38	44.00	4.56	16.50	11.96	
77.96	13.07	11.20	7.89	10.19	9.81	22.68	58.78	32.66	11.15	4.86	47.21	4.35	17.93	11.71	
73.05	11.33	9.44	12.25	10.39	9.33	27.39	56.20	34.15	14.50	4.74	40.57	4.64	17.79	10.61	
121.87	13.52	10.66	9.91	9.78	9.27	26.26	55.55	33.17	11.20	4.83	38.54	4.33	15.91	12.96	
65.10	14.34	11.15	11.32	9.10	10.04	26.62	58.39	32.31	17.10	4.65	41.26	4.73	16.48	11.35	
60.73	15.27	11.36	9.83	10.01	9.23	33.76	50.47	33.65	18.63	4.81	37.66	4.35	15.35	10.73	
128.34	14.18	14.13	8.57	8.29	9.06	32.96	46.61	31.98	20.58	4.44	47.30	4.94	15.59	12.14	
56.08	15.23	10.01	13.23	9.98	11.13	28.61	48.58	30.31	15.54	4.66	47.67	4.26	15.60	12.74	
99.41	15.26	10.19	9.19	8.95	11.17	33.55	55.15	29.73	15.27	4.53	47.22	4.32	19.01	12.14	
55.63	14.22	12.72	11.00	10.69	9.43	32.54	44.46	33.95	18.67	4.78	40.01	4.72	18.66	11.15	
110.71	11.66	10.04	8.80	9.56	9.76	30.23	48.12	30.67	16.72	4.63	38.57	4.49	15.29	11.03	
112.74	11.56	9.39	7.72	10.67	10.35	32.73	42.05	34.61	14.71	4.80	49.54	4.81	18.14	10.62	
65.00	11.51	9.74	12.61	10.16	9.79	25.73	58.74	32.23	20.59	4.53	44.07	4.52	18.31	11.08	
87.56	12.95	13.79	9.53	9.40	9.59	27.51	58.87	30.86	19.13	4.67	48.45	4.26	18.80	12.73	
48.80	15.91	13.53	8.12	10.32	10.70	33.93	44.26	34.02	11.07	4.64	48.15	4.79	17.07	11.65	
69.75	11.11	11.62	9.86	8.91	10.89	26.15	42.86	29.64	19.69	4.91	39.69	4.55	17.64	10.90	
122.76	13.00	13.47	12.63	8.50	11.15	31.33	56.34	33.93	18.89	4.74	41.17	4.85	17.50	10.85	
105.47	13.02	13.00	9.37	10.27	10.27	32.80	44.26	34.84	14.94	4.84	43.35	4.61	16.74	12.88	
61.77	12.51	11.75	7.36	9.72	10.63	30.28	50.10	28.69	15.87	4.75	39.91	4.52	18.00	12.54	
79.04	13.62	12.02	7.50	8.45	9.98	24.65	50.97	33.61	13.75	4.77	43.16	4.91	17.17	12.53	
122.36	12.37	9.27	7.69	8.95	9.62	26.26	45.32	31.24	17.61	4.89	46.83	4.45	16.81	10.28	
72.93	12.85	10.26	9.96	9.43	24.09	60.54	32.04	12.37	4.86	49.57	4.56	19.01	12.76		
71.23	13.97	13.92	9.43	9.69	10.00	21.40	51.01	33.34	21.61	4.52	48.82	4.65	18.39	11.63	
77.18	13.34	9.55	12.26	9.21	9.70	22.83	48.35	29.73	16.23	4.62	45.18	4.38	18.49	10.37	
98.82	15.74	13.14	6.84	8.47	10.81	22.80	58.71	31.67	19.91	4.73	44.02	4.28	15.26	11.39	
134.32	11.77	13.92	13.03	8.43	10.09	26.65	42.26	33.70	12.89	4.59	38.48	4.77	15.50	10.21	
57.24	12.48	13.63	11.49	11.18	9.85	21.91	46.94	33.14	15.27	4.81	40.41	4.47	18.70	12.18	
94.23	13.25	13.01	11.16	9.85	10.50	25.91	60.80	32.01	18.81	4.42	40.34	4.77	18.47	12.80	
111.16	14.65	14.39	9.07	9.97	10.08	31.78	44.54	29.37	13.71	4.58	47.34	4.44	18.87	11.83	
59.14	15.11	10.72	12.77	8.67	10.54	21.80	50.45	33.28	17.82	4.70	41.72	4.81	15.43	12.06	
129.03	15.07	12.36	9.64	10.50	10.85	24.66	46.08	31.31	21.60	4.66	37.72	4.36	16.60	10.95	
63.41	11.91	14.36	9.21	9.55	9.28	31.37	60.80	33.48	19.52	4.77	47.97	4.83	19.01	12.24	
68.97	12.44	11.66	7.84	9.03	11.23	33.45	58.24	31.04	16.08	4.57	45.04	4.65	17.68	11.46	
71.25	12.45	12.58	13.02	10.57	9.29	23.36	47.14	33.27	17.16	4.75	47.53	4.33	15.06	10.47	
121.98	12.05	9.33	10.90	9.94	10.43	27.41	48.31	30.82	11.03	4.50	50.31	4.49	15.75	12.87	
125.16	11.74	12.79	9.99	10.71	10.92	29.03	43.72	30.81	18.22	4.53	46.04	4.80	16.03	10.47	
119.89	11.61	13.13	7.13	9.28	9.05	27.32	58.49	34.77	16.32	4.88	44.11	4.38	16.85	10.37	
75.71	11.20	13.12	12.61	8.46	10.53	26.60	51.15	33.53	17.09	4.78	41.99	4.73	15.65	11.09	
57.67	14.96	13.87	13.27	10.14	10.96	24.36	59.97	30.08	17.74	4.50	49.67	4.75	18.82	10.59	
109.68	14.82	14.11	12.81	8.51	9.75	32.07	41.62	34.16	16.12	4.73	38.37	4.78	18.96	11.03	
45.38	11.05	9.67	12.20	9.07	9.90	32.17	58.44	32.42	12.43	4.73	40.24	4.66	18.75	12.97	

		P	O	N	M	L	K	J	I	H	G	F	E	D	C	B	A	
65.18	11.05	10.92	11.11	25.95	41.26	34.49	20.01	4.60	4.56	12.69	16.43	323.72	373.33	361.61	360.73	392.11	384.83	
111.59	14.06	11.47	6.87	8.26	9.13	26.71	57.15	28.77	17.39	4.81	43.07	4.44	18.52	11.13	10.89	18.49	10.89	10.89
103.43	12.98	11.31	6.86	10.20	10.36	29.07	47.27	29.19	19.67	4.88	42.54	4.46	18.46	12.61	10.89	16.22	10.23	10.23
86.56	14.53	12.06	10.77	10.79	9.71	21.49	51.79	32.04	21.74	4.72	43.24	4.83	16.22	12.61	10.89	16.22	10.23	10.23
125.82	14.94	10.32	11.32	10.67	9.59	29.81	52.29	29.06	14.51	4.46	45.73	4.37	17.88	11.34	10.90	17.88	11.34	11.34
123.18	15.57	11.71	10.32	8.22	11.19	23.07	53.62	29.83	19.49	4.92	43.07	4.92	14.82	10.90	10.90	14.82	10.90	10.90
54.05	13.12	11.64	12.28	8.37	10.51	30.28	59.10	29.71	12.39	4.87	50.79	4.75	16.81	10.38	10.38	329.08	10.38	10.38
52.64	14.53	12.67	11.73	10.58	10.40	32.94	41.06	29.48	21.12	4.59	43.51	4.78	15.51	12.61	12.61	318.16	12.61	12.61
124.75	12.48	11.22	7.15	10.72	11.17	32.77	52.90	30.08	13.36	4.53	38.19	4.78	16.03	11.76	11.76	381.91	11.76	11.76
103.45	13.82	10.52	9.65	9.83	10.35	25.81	47.49	29.61	14.32	4.64	49.30	4.53	17.78	10.75	10.75	361.84	10.75	10.75
70.08	14.95	12.26	11.84	10.95	10.53	31.38	50.83	28.84	15.13	4.88	42.21	4.74	17.05	11.78	11.78	337.45	11.78	11.78
87.37	15.09	13.46	12.99	9.90	10.95	25.15	46.50	33.56	17.28	4.65	40.71	4.47	17.50	12.00	12.00	351.60	12.00	12.00
93.35	12.83	12.02	8.49	9.00	9.13	33.67	47.22	29.61	15.24	4.65	48.83	4.54	18.17	12.83	12.83	359.59	12.83	12.83
131.17	15.95	14.12	11.37	11.13	10.62	24.31	44.26	33.89	17.32	4.49	44.33	4.92	17.47	11.73	11.73	397.07	11.73	11.73
48.58	11.15	13.23	11.14	9.73	11.04	26.14	60.50	33.89	19.49	4.67	45.23	4.75	15.98	12.83	12.83	328.34	12.83	12.83
125.51	15.29	11.19	11.05	9.79	9.21	24.08	54.54	33.83	15.18	4.84	45.22	4.78	18.54	11.01	11.01	394.07	11.01	11.01
113.75	15.15	10.27	10.01	9.79	9.42	27.44	45.90	31.80	17.74	4.81	43.73	4.41	17.26	12.60	12.60	374.08	12.60	12.60
56.95	12.53	12.28	9.23	8.54	10.64	31.10	46.50	32.73	13.21	4.77	41.49	4.42	16.12	12.34	12.34	312.84	12.34	12.34
122.61	14.92	11.08	13.01	8.59	10.50	25.31	52.54	30.56	11.49	4.69	38.13	4.86	14.73	11.04	11.04	374.04	11.04	11.04
124.98	11.04	11.92	7.98	10.39	10.95	33.95	52.60	30.99	15.17	4.72	50.17	4.58	17.19	12.97	12.97	399.62	12.97	12.97
47.90	14.24	9.40	12.98	10.14	10.95	21.82	60.23	33.60	15.01	4.92	46.93	4.45	17.84	11.84	11.84	322.26	11.84	11.84
73.42	14.66	11.28	10.16	9.85	11.14	21.02	43.45	32.24	20.09	4.70	45.13	4.69	15.97	12.23	12.23	330.03	12.23	12.23
120.47	11.42	12.70	7.71	10.62	10.65	24.47	56.56	32.31	11.17	4.62	39.76	4.90	17.06	11.34	11.34	375.76	11.34	11.34
66.43	15.91	13.36	9.21	9.26	10.37	31.91	45.56	32.30	21.48	4.40	50.15	4.61	15.50	11.96	11.96	342.41	11.96	11.96
134.22	15.46	12.64	12.07	10.51	9.87	31.64	55.27	33.04	19.02	4.69	48.14	4.83	18.20	10.70	10.70	420.31	10.70	10.70
125.71	11.28	10.12	11.31	9.97	9.02	26.43	59.46	29.00	11.60	4.88	43.94	4.77	18.15	11.70	11.70	387.35	11.70	11.70
101.66	14.66	11.14	11.42	8.60	9.56	29.60	43.76	32.67	21.13	4.39	42.83	4.57	15.97	12.55	12.55	364.52	12.55	12.55
68.43	13.30	13.28	11.91	9.36	9.03	23.27	53.82	34.77	12.83	4.62	37.92	4.85	15.31	10.16	10.16	322.87	10.16	10.16
80.80	12.75	10.45	7.39	9.53	10.29	23.09	55.16	34.34	13.56	4.81	44.29	4.64	16.71	12.55	12.55	340.34	12.55	12.55
55.69	15.20	10.70	8.30	8.46	10.26	25.62	44.51	31.03	18.23	4.55	45.45	4.47	18.32	10.49	10.49	311.28	10.49	10.49
130.66	14.13	13.76	11.40	9.25	9.22	33.75	40.52	34.48	13.67	4.88	49.57	4.82	17.44	10.53	10.53	398.08	10.53	10.53
89.80	14.31	12.95	9.18	8.76	10.60	23.99	55.23	31.03	14.14	4.47	42.50	4.37	17.16	12.50	12.50	350.99	12.50	12.50
96.17	11.99	12.64	11.13	10.53	11.01	22.09	55.32	31.12	16.02	4.44	40.35	4.27	15.40	11.64	11.64	354.11	11.64	11.64
96.70	13.36	13.84	9.90	9.06	9.24	23.22	41.90	29.56	15.23	4.64	39.18	4.72	12.87	12.87	12.87	339.74	12.87	12.87
50.06	14.98	13.84	8.37	9.11	9.90	23.35	51.42	34.25	11.49	4.50	39.03	4.63	16.56	10.68	10.68	302.18	10.68	10.68
50.42	13.98	9.79	12.24	10.82	10.50	26.29	52.42	39.57	15.34	4.58	42.59	4.92	17.05	11.78	11.78	312.29	11.78	11.78
116.35	11.27	11.30	11.86	8.71	9.78	21.33	44.79	31.33	15.26	4.91	41.71	4.69	16.32	11.23	11.23	360.85	11.23	11.23
57.43	12.43	11.58	7.48	8.83	9.32	33.39	49.08	31.10	17.93	4.57	49.70	4.82	15.48	11.23	11.23	324.37	11.23	11.23
121.03	14.69	12.22	7.99	10.63	9.94	26.33	47.81	31.35	12.11	4.85	44.17	4.41	18.83	10.86	10.86	377.22	10.86	10.86
96.65	12.96	10.43	11.81	9.65	10.08	31.70	60.07	33.76	21.06	4.82	45.05	4.60	16.04	11.28	11.28	379.94	11.28	11.28
94.86	11.14	10.50	9.44	9.03	10.21	24.70	49.53	34.61	15.04	4.55	40.70	4.35	16.83	12.61	12.61	348.08	12.61	12.61
111.75	14.05	11.22	11.70	11.07	10.70	28.60	47.29	34.58	18.41	4.71	47.81	4.30	17.26	12.71	12.71	386.17	12.71	12.71
100.04	11.30	12.70	10.20	10.93	10.52	32.26	42.00	30.42	21.55	4.53	48.01	4.74	18.90	11.25	11.25	366.34	11.25	11.25
54.85	12.00	9.96	8.66	10.16	21.95	53.32	29.80	15.18	4.80	48.42	4.91	16.30	12.66	12.66	309.80	12.66	12.66	
63.68	15.25	12.61	8.68	10.77	33.32	52.70	28.87	11.66	4.57	44.13	4.30	14.99	12.81	12.81	330.28	12.81	12.81	
92.79	13.80	13.25	8.13	8.41	11.03	30.84	52.84	31.01	20.94	4.45	37.99	4.48	17.11	12.19	12.19	359.27	12.19	12.19
72.34	12.02	11.40	10.72	10.56	10.56	33.83	42.72	34.83	19.07	4.73	40.28	4.59	15.73	11.03	11.03	334.57	11.03	11.03
106.51	11.74	11.05	11.49	11.11	10.31	21.86	47.64	34.69	14.22	4.64	46.64	4.51	14.79	11.29	11.29	354.66	11.29	11.29

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
74.56	14.55	13.84	7.94	9.06	11.00	22.37	52.14	31.80	13.07	4.85	46.76	4.68	17.31	336.54	
49.35	12.33	12.81	11.74	10.43	11.19	29.76	55.39	32.75	15.68	4.55	37.43	4.36	16.73	316.59	
66.95	14.34	10.89	13.13	9.13	10.85	23.91	49.49	29.99	18.70	4.63	39.28	4.49	17.63	325.58	
52.35	13.30	10.52	11.03	11.18	10.31	23.77	55.39	31.20	14.62	4.65	43.05	4.56	14.73	312.13	
58.26	13.92	13.18	11.88	10.01	9.87	22.47	44.85	29.69	14.21	4.61	41.95	4.73	15.48	308.10	
106.17	13.69	12.48	12.18	10.00	11.07	25.25	60.21	33.63	17.20	4.81	46.98	4.92	17.07	12.49	
65.21	13.94	9.91	12.97	9.16	10.69	27.92	48.41	34.37	16.15	4.46	37.93	4.59	15.86	12.26	
54.87	12.08	11.75	7.91	10.37	11.04	32.80	59.91	29.21	14.71	4.74	47.61	4.33	15.04	12.24	
46.09	11.94	14.29	8.06	10.63	11.15	25.98	58.05	30.37	14.20	4.70	38.95	4.60	15.71	10.82	
80.49	14.32	13.66	9.56	9.89	10.04	32.78	42.35	33.69	13.48	4.90	44.90	4.47	18.70	10.94	
63.06	15.23	14.19	7.61	9.51	11.11	23.52	46.78	29.03	18.65	4.93	45.36	4.38	17.08	12.06	
64.24	12.31	11.23	11.37	10.73	11.09	25.37	60.58	32.61	12.27	4.76	44.83	4.37	16.33	10.03	
120.37	15.23	10.07	7.50	10.11	9.00	25.69	49.20	34.43	14.29	4.73	41.04	4.40	18.50	11.71	
72.02	13.09	13.67	12.53	8.46	9.29	28.07	58.79	30.06	11.42	4.86	44.31	4.86	16.87	11.35	
120.00	14.32	10.89	7.94	10.18	10.37	21.72	60.80	28.64	12.23	4.90	42.87	4.39	18.73	10.60	
134.16	14.59	9.08	13.23	10.15	9.09	24.46	54.69	31.56	15.49	4.73	46.44	4.74	18.49	11.89	
95.71	15.98	9.24	7.29	11.11	9.61	24.70	55.65	28.65	11.87	4.53	46.14	4.69	18.77	13.00	
125.43	14.92	12.19	8.37	10.54	10.37	23.86	43.37	34.15	18.58	4.68	45.42	4.63	17.41	10.00	
50.39	14.16	13.58	13.28	8.77	9.87	30.99	50.44	29.71	11.18	4.71	38.34	4.84	18.63	12.69	
122.13	14.39	9.10	11.78	10.46	10.33	22.82	58.74	29.49	20.81	4.52	47.18	4.44	10.89	10.89	
64.06	15.56	9.08	11.10	9.50	10.36	24.18	51.03	32.83	19.29	4.84	43.58	4.62	15.06	12.23	
90.32	15.99	13.40	11.44	8.75	10.94	26.52	50.10	31.97	14.65	4.60	39.66	4.46	17.32	10.97	
132.53	15.73	12.91	11.32	10.18	10.54	33.68	44.06	30.24	17.71	4.92	41.83	4.78	17.10	12.06	
102.76	13.42	12.08	13.00	9.37	9.21	29.94	48.62	30.40	20.69	4.65	41.33	4.76	15.51	10.12	
68.92	14.38	10.95	10.51	8.96	10.63	29.44	41.46	31.55	20.89	4.40	44.08	4.37	15.78	10.29	
94.20	14.75	12.27	9.53	9.60	11.00	30.36	58.32	34.67	20.19	4.65	41.87	4.52	15.73	11.27	
112.38	11.05	9.20	7.97	9.86	10.30	22.80	47.82	30.58	21.14	4.81	42.42	4.84	17.89	10.84	
66.30	12.42	12.00	12.00	8.82	10.12	29.17	57.28	30.37	17.26	4.83	42.17	4.71	15.36	11.94	
130.57	14.03	11.43	7.31	10.35	9.42	30.12	45.41	30.37	19.11	4.73	48.69	4.51	16.32	11.30	
121.49	15.15	12.94	12.59	8.88	11.18	33.96	42.13	28.87	15.81	4.48	40.66	4.87	18.38	12.62	
117.16	15.90	12.85	8.62	8.21	10.80	29.95	42.52	32.93	20.62	4.74	49.47	4.67	15.34	10.08	
52.83	12.84	11.68	12.45	8.99	10.39	30.28	55.49	30.77	14.58	4.70	39.57	4.85	16.03	11.12	
47.38	15.11	13.59	7.09	10.51	9.59	26.42	41.27	34.01	15.76	4.49	46.57	4.91	16.78	10.31	
82.78	14.93	10.00	11.05	8.75	10.62	28.68	52.80	30.95	12.18	4.65	43.27	4.68	16.66	10.83	
115.52	15.89	13.52	7.09	8.84	9.15	22.49	59.27	30.27	14.35	4.57	50.83	4.49	17.83	10.74	
95.39	15.04	11.54	10.26	8.78	9.30	31.45	42.44	30.00	15.48	4.76	39.73	4.54	16.49	10.97	
99.83	12.21	10.65	7.25	9.37	10.68	31.48	54.75	32.51	15.48	4.40	43.51	4.35	16.35	10.53	
127.17	11.47	12.08	7.74	8.93	11.24	33.60	53.98	31.11	13.15	4.75	41.57	4.62	17.36	11.64	
58.66	15.98	14.27	7.22	9.21	9.92	28.79	58.90	33.95	20.68	4.92	50.81	4.40	18.15	11.33	
133.72	12.93	11.54	10.31	8.79	10.19	29.90	58.85	29.52	14.88	4.83	42.57	4.58	18.61	12.44	
81.51	13.13	9.26	9.83	8.49	10.80	21.55	58.57	29.27	12.96	4.39	38.63	4.32	15.54	10.53	
129.83	11.41	13.22	11.79	10.15	11.09	27.27	49.20	31.49	13.05	4.86	40.42	4.62	17.36	11.64	
87.56	13.61	12.03	7.81	9.88	9.85	21.45	55.38	30.95	17.22	4.62	41.56	4.49	16.11	12.09	
78.91	15.80	10.53	10.49	10.08	10.85	22.15	47.10	33.64	12.96	4.45	43.52	4.60	17.85	10.31	
87.10	14.59	12.17	10.83	10.42	10.22	33.15	60.01	33.27	11.33	4.47	40.68	4.74	17.94	12.73	
129.12	15.50	9.66	9.28	11.00	10.52	23.68	51.23	34.25	18.33	4.82	45.61	4.79	14.76	11.90	
68.54	15.96	10.26	9.26	10.64	10.94	23.87	44.37	33.65	15.49	4.39	46.90	4.64	17.24	11.22	
79.52	11.58	13.55	10.15	11.14	9.88	22.38	56.25	33.24	20.39	4.68	39.43	4.47	16.77	11.87	

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
133.78	11.50	9.30	11.85	8.75	10.93	24.32	47.05	29.43	12.45	4.82	48.31	4.72	16.47	11.10	384.77
80.03	12.93	12.74	11.65	9.00	10.00	22.42	47.10	32.98	15.03	4.64	47.89	4.81	16.78	11.06	339.06
109.75	14.18	9.01	8.37	8.77	10.14	29.15	49.08	33.85	11.60	4.42	47.60	4.60	17.46	10.54	368.52
115.20	14.72	10.52	12.03	8.95	9.27	33.75	56.86	32.27	14.69	4.61	45.42	4.56	16.17	12.10	391.11
85.50	11.89	10.25	7.22	10.11	10.92	31.42	60.23	30.88	11.17	4.71	45.76	4.81	15.48	12.73	353.08
102.02	15.56	11.16	11.91	9.03	9.28	31.06	54.84	31.79	21.62	4.77	49.16	4.56	18.42	10.88	386.07
116.59	11.83	12.15	8.46	10.80	11.23	22.64	42.91	31.71	11.25	4.50	44.39	4.36	17.73	11.85	362.40
101.79	11.68	13.50	9.81	9.57	9.23	23.69	45.44	32.42	12.32	4.85	44.93	4.56	18.88	10.68	353.36
127.50	13.78	12.36	10.93	10.95	10.92	28.51	42.87	34.22	17.48	4.74	45.65	4.42	17.64	11.88	393.85
59.87	11.21	10.13	12.26	8.59	10.63	29.85	54.76	31.78	15.36	4.86	39.17	4.65	15.64	12.76	321.51
105.25	15.00	12.79	8.58	9.01	10.74	22.11	60.02	33.90	11.41	4.75	41.76	4.30	16.99	11.11	367.72
125.16	13.64	9.73	13.24	9.08	9.86	27.37	53.46	29.99	17.72	4.45	48.84	4.90	15.72	10.55	393.71
50.06	14.31	9.90	11.43	9.14	10.76	24.78	44.49	31.19	11.52	4.93	46.03	4.50	17.75	10.16	300.94
105.32	13.70	14.39	11.91	11.12	10.13	32.39	48.98	28.79	19.70	4.90	48.44	4.74	15.60	11.11	381.20
116.52	11.21	9.10	10.46	9.33	11.01	33.72	51.73	28.68	11.37	4.78	37.58	4.48	16.63	12.39	368.99

## A.5 MICAP RECEIPT — NO DUE-IN

The following pages contain the raw data collected during the process flow/time and motion effort for the MICAP receipt — no due-in process. The process flow is depicted in Section 6, Figure 6-5. A composite of the raw data collected for the process is provided in Section 6, Table 6-5. Raw data displayed represent actual times captured (in seconds) for each observed occurrence of the process (rows) and correlate to individual process steps (columns) as follows:

<u>Column</u>	<u>Process Step</u>
A	Review bill of lading/shipping documentation
B	Unload property/materiel
C	Separate materiel by requisition priority
D	Separate materiel by size
E	Assign temporary location (tote box/pallet)
F	Sign receipt documentation
G	Take receipt to input terminal
H	Input/process receipt — receive reject notice
I	Hand-carry to MICAP section
J	MICAP researches, loads requisition
K	Walk back to receiving
L	Re-input receipt
M	Return to materiel, attach DD 1348/DOR
N	Stamp DOR with MICAP priority
O	Take/move materiel to pick-up and delivery
P	Time stamp document
Q	Enter in MICAP control log
R	Forward documents to document control
S	Composite/total of all process steps

Receipt — MICAP/Due-In Not Loaded											
A	B	C	D	E	F	G	H	I	J	K	L
51.70	12.78	13.07	12.40	8.50	9.18	26.64	40.04	66.62	110.39	63.20	40.04
92.93	15.64	13.02	9.94	8.51	10.58	33.61	40.06	66.94	104.69	50.71	40.06
82.08	15.96	13.54	6.92	10.88	9.20	26.09	40.11	62.10	94.48	64.73	40.11
70.41	15.70	14.29	7.03	8.84	10.54	28.36	40.20	57.72	109.27	62.54	40.21
121.78	15.35	12.11	10.35	8.67	10.33	23.04	40.21	65.43	116.60	51.05	40.27
124.01	14.91	9.93	12.33	8.77	10.88	33.55	40.27	68.08	85.50	65.19	40.48
110.78	12.21	9.46	8.44	10.67	26.57	40.48	40.78	62.39	91.30	57.74	40.78
114.84	13.09	9.15	7.49	8.40	9.30	32.25	42.36	56.48	94.56	64.50	48.66
52.21	13.77	9.04	7.74	9.52	10.63	31.07	40.52	64.69	91.12	49.75	40.52
118.71	11.17	11.87	11.18	8.30	10.83	22.07	40.58	54.72	94.62	53.20	40.58
115.41	14.14	11.71	8.72	9.36	10.39	27.87	40.67	68.20	76.38	62.32	40.67
52.79	14.15	14.28	9.80	9.39	10.00	22.81	40.78	62.39	91.30	57.74	40.78
126.75	12.10	9.50	12.01	10.95	10.15	31.68	40.82	60.13	94.84	49.74	40.82
68.09	13.19	11.50	9.36	10.69	10.21	31.27	40.88	50.29	73.45	61.74	40.88
104.55	15.00	13.85	10.57	9.38	11.22	22.20	40.94	54.01	91.97	58.71	40.94
119.35	14.59	11.79	10.41	9.63	9.57	26.64	41.01	63.93	101.51	60.24	41.01
96.50	16.00	11.10	8.09	9.47	10.21	30.27	41.04	66.36	90.25	57.23	41.04
112.08	15.19	13.68	11.10	8.26	9.38	21.92	41.06	59.39	111.41	53.48	41.06
86.54	14.59	11.45	11.75	10.16	10.85	32.52	41.26	68.60	105.16	63.79	41.26
111.15	11.58	13.42	12.70	8.57	9.01	29.73	41.27	51.75	96.19	60.59	41.27
102.79	14.40	9.97	11.22	10.00	10.45	32.83	41.35	59.82	94.97	62.48	41.35
76.22	13.91	12.68	9.61	8.48	10.35	27.09	41.46	55.32	95.56	62.12	41.46
82.27	11.72	10.55	12.86	9.99	9.92	22.59	41.54	55.73	115.27	67.42	41.54
51.80	15.53	9.81	12.18	9.13	9.75	31.62	41.62	54.16	77.74	65.89	41.62
92.90	11.69	12.97	11.83	10.68	10.71	26.73	41.77	51.04	109.60	66.13	41.77
115.82	14.60	13.88	6.91	9.22	10.11	33.06	41.90	68.19	111.35	67.46	41.90
120.29	13.77	10.51	7.66	10.29	10.82	31.65	41.90	61.79	76.51	61.18	41.90
124.27	15.75	12.15	12.78	8.26	10.83	33.05	41.91	61.83	107.36	51.19	41.91
109.99	14.35	13.19	8.70	9.05	9.25	26.75	42.00	50.50	69.76	51.21	42.00
116.79	15.74	10.90	7.19	9.83	11.15	21.62	42.05	56.96	115.80	64.96	42.05
134.64	11.58	11.92	11.21	9.89	9.52	32.09	42.13	65.68	110.89	52.14	42.13
70.63	15.44	12.45	7.52	9.09	10.49	28.36	42.15	66.41	110.86	66.85	42.15
132.93	12.31	13.36	8.13	9.59	10.22	33.36	42.24	66.69	113.49	50.62	42.24
61.73	14.62	12.25	9.52	8.73	9.98	28.76	42.26	54.10	98.03	55.20	42.26
74.66	15.48	13.38	9.72	10.62	10.37	28.83	42.28	67.70	103.78	63.86	42.28
100.13	15.79	13.39	8.23	11.01	10.55	26.26	42.31	64.22	111.24	66.70	42.31
98.92	12.70	11.80	10.06	8.86	9.94	30.32	42.72	66.36	81.70	59.13	42.72
124.71	12.55	10.45	8.47	9.16	10.75	31.77	42.35	51.79	94.48	57.19	42.35
52.58	11.95	10.34	9.35	9.40	11.01	33.54	42.44	58.13	109.80	50.45	42.44
66.37	15.35	9.49	13.11	10.40	11.09	25.29	42.52	64.84	84.98	52.45	42.52
47.57	11.00	11.46	9.57	9.36	10.95	22.51	42.69	68.26	102.02	64.56	42.69
98.92	12.70	11.80	10.06	8.86	9.94	30.32	42.72	66.36	81.70	59.13	42.72
124.74	12.24	10.48	8.37	11.25	12.72	42.86	65.66	78.08	58.95	42.86	17.25
118.29	15.23	10.70	12.33	9.42	10.49	31.82	42.87	50.33	85.98	63.40	42.87
66.75	11.06	12.68	10.77	9.98	9.09	32.13	42.89	58.85	79.77	64.25	42.89
63.32	12.08	13.57	7.34	9.72	11.03	25.30	43.03	64.34	73.02	57.64	43.03

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
125.89	13.24	9.94	10.99	8.28	10.19	30.34	43.30	54.02	84.48	59.68	43.30	15.55	4.82	45.94	4.52	17.49	11.45	593.42
81.34	13.25	11.41	10.50	10.65	9.90	28.24	42.91	62.76	79.61	63.28	42.91	20.61	4.57	48.22	4.65	15.12	10.33	560.26
46.56	14.51	11.93	11.29	10.70	10.27	31.61	43.37	66.57	97.70	52.06	43.37	12.13	4.49	46.47	4.59	15.39	11.23	534.22
78.96	15.14	12.97	10.97	10.44	9.92	32.74	43.45	57.33	90.17	63.60	43.45	20.15	4.74	37.81	4.56	15.11	11.57	563.07
116.13	12.14	12.52	12.62	10.50	9.77	21.02	43.46	52.89	68.80	66.13	43.46	16.53	4.63	37.03	4.36	17.60	11.37	560.97
81.28	11.80	13.70	12.36	8.37	10.61	30.22	43.51	53.24	89.88	56.35	43.51	21.20	4.50	47.22	4.81	14.93	12.34	559.83
124.65	14.19	9.11	8.54	9.59	9.55	29.12	43.55	65.69	74.99	65.77	43.55	20.79	4.86	46.93	4.51	14.80	11.76	601.96
99.69	12.44	12.28	10.60	8.28	9.67	27.08	43.56	63.54	78.24	55.55	43.56	18.32	4.88	46.59	4.56	15.50	11.53	565.89
71.96	12.17	12.18	10.76	8.68	9.70	24.55	43.62	52.60	78.78	53.37	43.62	18.06	4.61	37.98	4.48	16.78	10.96	514.85
111.04	12.14	13.13	7.34	8.62	10.47	23.80	43.72	55.50	91.84	50.66	43.72	21.16	4.81	49.99	4.44	18.03	12.69	583.09
45.38	15.49	9.77	10.04	11.16	9.47	30.13	43.74	59.34	104.04	57.81	43.74	19.11	4.87	50.24	4.39	18.33	9.97	547.01
58.44	15.29	11.95	9.97	9.26	10.80	23.75	43.75	50.05	93.06	58.08	43.75	11.45	4.61	44.07	4.42	15.78	10.73	519.21
72.73	14.54	13.67	12.76	9.12	10.81	26.80	43.76	55.26	74.40	67.21	43.76	15.37	4.84	46.30	4.40	16.56	10.09	542.38

**A.6****SERVICEABLE TURN-IN**

The following pages contain the raw data collected during the process flow/time and motion effort for the serviceable turn-in process. The process flow is depicted in Section 6, Figure 6-6. A composite of the raw data collected for the process is provided in Section 6, Table 6-6. Raw data displayed represent actual times captured (in seconds) for each observed occurrence of the process (rows) and correlate to individual process steps (columns) as follows:

<u>Column</u>	<u>Process Step</u>
A	Review AF 2005/turn-in documentation
B	Sign/date documents — assign temporary location
C	Inspection review documents — signs document
D	Take receipt to input terminal
E	Input/process turn-in
F	Return to materiel
G	Attach DD 1348 — send to storage and issue
H	Send documents to document control
I	Composite/total of all process steps

**Turn-in / Serviceable**

A	B	C	D	E	F	G	H	I
32.94	8.95	6.81	29.47	42.32	40.21	15.51	9.50	185.71
39.75	8.81	6.49	28.66	52.46	35.09	15.76	5.36	192.38
43.59	9.45	6.80	28.65	52.68	33.50	16.51	11.63	202.82
46.63	9.42	7.68	29.72	53.22	23.15	15.11	11.56	196.49
43.55	9.19	5.98	30.41	47.07	39.43	15.82	6.11	197.56
38.45	8.83	6.83	25.01	39.04	36.97	15.08	9.57	179.79
44.09	9.29	7.83	27.83	51.43	36.27	17.06	4.64	198.45
37.03	8.83	7.50	28.82	47.24	35.32	16.70	11.08	192.54
38.35	9.81	5.96	25.03	50.86	26.41	15.05	9.64	181.11
36.50	9.81	7.77	28.61	50.21	38.97	16.66	8.25	196.78
36.63	8.92	8.21	23.09	54.76	38.27	15.51	6.35	191.74
42.26	8.93	7.92	23.21	50.94	27.33	15.37	10.05	186.01
44.30	9.72	7.81	28.76	51.83	23.41	16.38	7.37	189.58
29.10	9.31	7.10	26.94	53.75	36.57	15.63	6.50	184.89
30.34	8.92	6.23	23.70	53.57	26.98	16.37	9.45	175.56
43.70	9.84	6.69	28.53	51.09	34.46	15.77	7.94	198.02
38.89	9.65	6.33	31.21	42.01	27.75	17.24	9.20	182.28
39.65	9.55	7.88	25.10	40.06	33.01	16.21	5.22	176.69
29.06	9.80	7.22	26.40	47.51	41.45	16.84	5.29	183.57
35.44	9.28	6.43	25.87	46.97	26.23	14.87	6.96	172.05
30.02	8.76	6.37	26.99	44.98	25.58	15.11	5.56	163.38
40.09	8.89	6.13	23.84	50.24	28.97	15.88	10.97	184.99
39.75	9.13	7.62	23.10	51.23	40.37	15.25	5.44	191.89
45.80	9.36	8.11	24.19	51.31	37.62	15.21	6.30	197.90
39.17	9.30	6.49	30.11	38.48	28.06	16.98	8.74	177.34
43.21	9.56	7.01	24.06	46.51	28.44	16.90	9.65	185.33
40.55	9.22	6.43	24.53	41.77	39.61	16.75	11.58	190.44
34.54	9.89	7.73	25.81	39.43	34.15	16.53	7.47	175.56
45.75	9.03	5.95	25.21	37.64	38.65	16.69	7.83	186.75
29.67	8.89	6.93	27.59	52.26	30.26	16.97	7.07	179.64
32.10	8.88	6.54	23.14	45.29	23.55	16.57	7.43	163.51
28.72	9.10	7.61	31.24	40.87	23.59	16.64	5.81	163.59
47.14	9.61	8.06	25.41	45.66	30.65	16.73	5.18	188.44
34.16	9.53	7.82	31.09	43.54	37.12	15.89	4.54	183.70
39.05	8.77	6.88	29.50	54.06	31.47	15.85	6.28	191.85
35.52	9.72	8.17	24.73	48.72	35.19	17.43	5.56	185.04
45.00	9.60	8.23	25.13	40.10	29.96	17.41	7.65	183.08
34.47	8.93	7.69	22.98	39.01	31.96	16.00	4.66	165.71

**A.7****RECEIPT — NOTICE-TO-STOCK/NO WAREHOUSE LOCATION**

The following pages contain the raw data collected during the process flow/time and motion effort for the receipt with notice-to-stock/no warehouse location process. The process flow is depicted in Section 6, Figure 6-7. A composite of the raw data collected for the process is provided in Section 6, Table 6-7. Raw data displayed represent actual times captured (in seconds) for each observed occurrence of the process (rows) and correlate to individual process steps (columns) as follows:

<u>Column</u>	<u>Process Step</u>
<b>A</b>	Assign warehouse location
<b>B</b>	Hand-scribe bin label
<b>C</b>	Affix label to bin, bin materiel
<b>D</b>	Return to input terminal
<b>E</b>	Post FCS to M14
<b>F</b>	File FCS in suspense file
<b>G</b>	Verify location on next day D04
<b>H</b>	Correct/re-input FCS
<b>I</b>	Destroy FCS suspense copy
<b>J</b>	Composite/total of all process steps

**Receipt / Notice To Stock - No Warehouse Location**

A	B	C	D	E	F	G	H	I	J
39.05	24.81	5.10	40.95	54.95	13.56	21.34	61.38	3.86	265.00
41.70	22.77	8.52	44.38	50.36	13.42	20.77	38.27	3.91	244.10
41.83	23.79	7.82	46.26	47.04	13.21	20.92	43.99	4.21	249.06
36.14	24.34	7.03	40.87	40.87	13.05	20.89	38.10	4.07	225.40
39.84	22.89	7.46	48.85	57.93	14.37	20.67	56.83	4.07	272.90
37.51	22.58	6.94	50.05	48.22	14.44	21.62	71.00	3.98	276.33
41.12	25.17	8.05	40.85	58.13	13.47	22.80	61.14	3.91	274.64
40.36	26.20	8.39	43.09	47.47	13.21	21.74	59.97	3.92	264.35
38.88	25.71	8.75	44.52	59.39	13.43	21.00	47.26	4.11	263.04
39.21	24.22	8.63	40.33	52.25	13.66	23.51	68.41	4.19	274.42
36.04	24.57	5.71	46.07	40.33	13.37	22.12	49.86	3.90	241.99
39.71	25.11	5.93	49.01	59.55	13.27	21.25	51.71	4.04	269.59
37.43	25.34	6.09	40.58	56.12	14.02	23.42	47.26	3.96	254.24
41.15	25.80	7.24	42.86	51.25	14.29	20.67	70.35	4.13	277.75
38.53	24.47	7.46	44.28	55.58	13.76	23.77	48.35	4.17	260.35
41.95	25.97	7.07	40.47	52.29	14.08	22.58	45.55	3.86	253.82
37.85	24.60	5.88	47.87	40.69	13.80	22.32	64.35	4.04	261.40
38.61	24.40	9.38	44.97	48.81	13.44	23.12	72.73	4.18	279.64
35.58	23.12	7.05	41.28	52.32	13.41	21.03	59.71	4.03	257.55
41.27	25.60	9.90	40.71	46.56	13.02	21.26	64.69	4.19	267.19
36.65	24.26	5.28	49.33	44.25	13.46	22.78	72.14	4.13	272.28
39.78	22.43	9.67	47.62	57.50	14.40	21.13	58.85	4.05	275.42
36.45	26.21	8.11	41.43	42.07	13.43	22.20	37.60	4.14	231.63
36.13	26.01	9.66	43.18	53.40	14.26	22.51	47.89	3.98	257.03
40.41	24.79	6.26	45.08	45.69	13.56	20.65	39.29	3.85	239.58
38.04	24.96	7.18	48.65	48.64	13.13	23.14	65.67	3.92	273.32
37.03	22.59	9.70	41.02	42.95	13.32	21.85	72.62	3.91	264.98
35.93	25.62	5.06	49.36	51.51	14.37	22.83	42.17	3.90	250.74
37.46	25.95	6.17	43.65	55.59	14.06	22.27	39.12	4.19	248.46
41.16	26.01	9.82	41.26	56.31	13.36	21.92	43.29	3.90	257.04
36.04	22.41	9.07	49.43	55.78	14.12	20.69	59.42	3.97	270.94
39.05	24.43	8.24	43.48	57.31	13.28	23.73	64.95	4.04	278.50
38.65	24.81	5.57	44.23	46.94	14.32	21.72	60.31	4.12	260.66
35.65	22.99	9.32	40.64	47.19	13.07	20.95	68.61	4.17	262.58
40.14	22.82	7.88	43.23	55.86	12.95	21.29	41.61	3.90	249.69
38.44	25.06	5.18	44.10	44.25	14.41	23.29	43.56	4.00	242.30
36.96	25.50	5.43	43.58	58.26	14.22	21.69	36.82	4.06	246.51
41.81	24.79	5.93	45.28	56.64	14.00	22.35	68.65	3.86	283.31
40.03	26.09	6.19	49.81	51.86	13.12	23.66	58.95	4.18	273.90
39.17	23.33	5.45	46.71	49.20	14.21	21.32	37.28	4.16	240.83
41.43	24.73	9.85	44.02	53.47	13.24	20.74	38.81	4.05	250.35
39.63	24.26	5.60	44.89	57.37	14.17	21.22	39.67	3.89	250.71
41.61	26.25	7.55	44.40	57.16	13.49	22.26	58.03	4.00	274.74
38.32	23.92	9.69	49.31	43.83	13.72	20.61	41.73	4.22	245.35

<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>G</b>	<b>H</b>	<b>I</b>	<b>J</b>
40.11	22.95	9.89	48.97	56.34	14.27	23.75	61.88	4.18	282.34
39.57	22.73	9.74	46.72	52.34	14.49	22.11	53.46	3.88	265.05
39.28	25.08	9.72	43.93	41.46	12.97	23.27	56.04	4.02	255.76
38.66	26.31	7.97	50.20	53.20	13.30	20.67	57.22	4.13	271.66
41.13	24.80	5.44	47.59	42.49	14.37	20.72	51.24	4.11	251.90
36.00	25.79	7.08	44.15	48.88	13.80	22.12	66.88	4.04	268.74
41.78	25.63	8.00	44.41	52.84	14.11	22.45	55.90	3.97	269.09

**A.8****ROUTINE ISSUES**

The following pages contain the raw data collected during the process flow/time and motion effort for the routine issue process. The process flow is depicted in Section 6, Figure 6-8. A composite of the raw data collected for the process is provided in Section 6, Table 6-8. Raw data displayed represent actual times captured (in seconds) for each observed occurrence of the process (rows) and correlate to individual process steps (columns) as follows:

<u>Column</u>	<u>Process Step</u>
A	Receive issue document
B	Stamp priority on document
C	Pull materiel and verify against document
D	Sign and date document
E	Move materiel to pick-up and delivery
F	Forward documents to document control
G	Composite/total of all process steps

**Issue—Routine Priorities**

A	B	C	D	E	F	G
9.43	7.62	16.40	8.94	39.78	11.46	93.62
10.54	5.85	10.74	10.34	48.69	11.76	97.92
10.06	6.22	17.33	9.72	34.92	11.36	89.61
8.87	6.27	16.41	9.29	36.54	9.75	87.12
6.49	8.01	11.52	9.33	48.82	10.80	94.97
8.51	8.07	13.93	9.99	30.51	10.61	81.62
8.48	7.85	10.70	9.92	47.10	10.11	94.15
8.74	5.24	12.30	8.77	44.37	11.19	90.61
9.60	6.38	11.40	9.27	38.89	11.94	87.49
7.40	7.78	16.82	9.18	31.87	10.12	83.17
10.26	6.07	15.10	10.55	37.40	9.78	89.17
10.59	5.88	15.75	9.08	42.29	10.58	94.17
7.83	5.89	16.71	9.30	45.33	12.66	97.72
9.18	5.32	16.37	9.27	42.35	12.25	94.74
10.11	7.74	12.53	8.87	43.91	10.07	93.23
6.59	6.76	13.10	10.01	32.68	12.06	81.20
7.31	6.88	15.14	8.38	32.75	10.93	81.40
7.74	6.16	14.87	9.27	43.56	9.91	91.51
10.98	7.34	15.43	10.25	39.83	9.74	93.57
7.65	6.74	17.32	10.22	47.43	10.81	100.18
10.59	6.70	14.32	10.51	49.41	10.76	102.29
6.76	6.50	15.45	8.21	32.87	10.14	79.93
8.06	6.31	13.90	9.06	46.72	12.03	96.08
7.86	5.32	15.53	9.65	40.87	10.32	89.55
11.25	6.62	12.34	8.87	33.47	12.24	84.79
8.48	7.79	11.04	8.82	45.03	10.52	91.68
6.33	5.30	11.03	10.43	35.56	11.15	79.81
11.26	5.82	13.58	8.85	47.28	10.15	96.95
9.07	5.77	12.66	9.61	31.66	11.41	80.17
6.21	8.20	10.84	9.74	34.35	11.58	80.92
11.38	6.92	15.98	8.92	33.10	9.79	86.08
8.78	6.41	17.41	9.51	39.61	11.31	93.02
9.86	6.06	11.90	9.92	31.63	11.33	80.69
6.95	5.85	10.89	10.65	45.26	12.38	91.99
6.34	7.71	14.80	8.30	47.42	9.95	94.52
10.73	6.99	17.57	10.18	41.49	12.48	99.43
10.39	5.72	15.48	9.69	44.18	10.52	95.98
7.50	7.59	14.25	8.94	39.09	11.89	89.25
9.92	6.13	11.73	9.10	37.45	12.68	87.01
7.40	7.65	17.50	9.30	36.53	10.85	89.22
9.92	5.39	11.83	8.38	34.08	12.45	82.04
6.93	7.30	14.24	9.28	43.94	10.39	92.08
7.16	6.39	15.37	8.89	40.18	10.81	88.81
7.27	6.72	15.51	9.61	33.69	12.04	84.84
6.52	5.66	10.97	8.43	33.67	10.95	76.21
9.48	6.10	11.77	9.82	39.20	10.14	86.51

A	B	C	D	E	F	G
11.15	7.42	14.84	8.73	34.20	10.82	87.16
9.31	6.63	14.85	8.50	47.55	9.73	98.08
8.50	6.62	15.38	8.29	30.69	83.02	98.03
9.73	5.65	15.36	7.08	49.21	11.48	104.62
11.14	5.15	12.53	5.15	46.01	12.16	98.27
6.39	5.40	11.55	5.40	39.77	10.01	82.97
6.79	8.24	11.22	7.13	10.26	12.08	86.57
7.13	8.16	12.71	8.16	44.51	9.76	90.70
10.64	5.65	12.93	5.78	48.48	11.76	98.16
11.53	5.78	12.93	5.40	45.14	11.79	96.51
6.35	5.40	11.37	7.15	47.45	10.26	89.57
7.15	7.64	13.44	7.15	41.67	9.93	90.23
11.23	7.78	17.24	7.78	32.00	11.29	88.92
10.86	6.36	14.08	6.36	33.36	12.18	85.17
10.86	6.02	14.24	6.02	31.88	12.41	85.25
10.48	5.42	14.65	7.96	44.79	11.53	98.59
10.79	7.16	14.15	10.79	47.88	11.51	101.84
9.90	7.65	16.14	9.90	44.84	11.77	99.58
9.58	8.05	12.82	8.05	33.40	11.16	83.63
11.34	5.42	16.16	10.00	44.14	9.75	96.82
6.54	7.85	13.42	8.85	31.76	11.50	79.93
8.72	5.94	14.96	8.72	43.10	10.64	91.87
8.21	8.27	12.15	9.57	49.21	10.42	97.63
6.84	7.62	16.89	6.84	36.92	11.11	88.12
9.90	5.53	17.54	9.90	36.67	10.48	89.81
6.56	7.27	13.25	6.56	38.13	10.89	86.14
6.21	7.64	14.60	6.21	47.79	9.88	95.00
9.57	6.83	17.23	9.57	47.79	9.67	101.48
6.82	5.15	11.59	5.82	39.28	11.96	84.21
10.07	8.03	16.55	10.07	31.98	12.13	89.33
9.34	5.74	15.30	9.34	37.53	11.10	88.19
6.83	7.28	10.85	6.83	37.68	12.53	84.82
7.05	6.56	10.78	7.05	32.31	11.68	78.86
10.49	7.91	11.60	10.49	42.53	12.68	95.42
9.74	5.64	15.98	9.74	33.10	11.14	86.15
6.86	5.18	16.15	6.86	36.48	10.94	85.13
7.02	5.96	13.55	7.02	46.00	11.32	93.70
11.16	7.03	16.70	7.03	38.47	12.18	96.02
6.85	6.63	14.59	6.85	47.22	10.27	94.60
10.32	7.29	11.86	10.32	36.69	10.96	85.56
6.68	6.86	11.52	6.68	42.79	12.48	89.42
9.94	7.65	16.26	9.94	38.73	9.85	90.91
7.18	8.16	11.19	7.18	34.51	10.05	80.45
6.63	6.63	9.05	6.63	34.03	10.38	83.54
6.50	6.50	9.70	6.50	41.06	9.96	88.76
8.37	7.74	12.05	8.37	41.10	9.92	90.43
6.81	5.39	17.45	6.81	39.60	11.07	89.43
9.85	7.08	11.19	9.85	33.86	11.42	89.10
9.60	7.90	17.02	9.60	33.86	11.42	89.10

A	6.69	5.35	15.05	10.59	37.90	10.43	86.01
B	7.06	5.56	15.58	8.29	48.90	12.59	97.98
C	8.52	6.51	11.84	8.18	31.14	10.26	76.44
D	11.06	5.56	11.26	9.81	48.79	11.61	98.09
E	6.47	6.82	17.51	8.30	49.04	10.89	99.03
F	8.75	5.26	14.14	10.45	38.13	9.89	86.62
G	9.17	7.84	13.81	8.14	33.42	11.04	83.42
	10.84	5.30	11.17	9.26	38.69	11.84	87.10
	7.11	6.88	16.38	10.69	30.92	10.16	82.13
	10.09	7.43	17.17	9.28	37.51	10.45	91.92
	6.36	7.32	13.20	9.00	31.52	9.82	77.23
	11.07	6.88	11.14	9.10	31.30	10.05	79.54
	10.53	7.52	11.48	8.67	41.13	11.39	90.72
	6.46	5.16	14.43	8.64	45.29	12.49	92.46
	6.62	5.66	16.67	10.50	34.49	12.66	86.61
	8.41	7.31	11.70	8.42	33.51	12.20	81.55
	6.29	7.82	11.80	8.90	43.39	11.35	89.54
	8.88	6.29	12.57	9.72	34.26	10.28	82.00
	9.83	8.20	11.13	8.45	30.20	12.04	79.85
	8.08	6.11	16.66	9.25	33.95	11.27	85.31
	7.22	5.79	16.08	9.40	43.61	11.80	93.89
	10.85	5.37	15.75	8.29	47.77	11.56	99.59
	11.17	7.52	14.62	9.28	44.71	12.62	99.93
	6.44	6.00	13.74	9.74	37.92	10.10	83.94
	11.30	6.26	11.29	9.27	46.63	10.21	94.96
	9.65	5.94	11.41	10.02	39.25	12.32	88.59
	7.01	7.94	12.25	9.42	32.87	12.10	81.57
	7.18	5.76	16.52	9.43	42.05	10.00	90.96
	9.72	5.18	12.01	10.45	38.57	10.29	86.21
	8.51	5.18	14.59	10.20	39.19	11.05	88.72
	6.38	7.44	16.08	9.20	40.92	11.38	91.41
	7.75	5.51	13.85	9.46	32.41	11.29	80.27
	9.33	6.93	13.87	10.02	46.19	12.04	98.38
	9.31	5.88	11.20	8.83	39.84	9.89	84.95
	8.54	8.04	16.07	9.82	49.49	9.90	101.85
	11.19	6.23	16.62	8.77	31.31	11.44	85.56
	8.54	8.18	11.08	9.39	39.64	10.52	87.34
	6.79	7.45	14.45	8.14	49.22	9.67	95.71
	8.58	5.17	13.36	8.52	44.94	11.96	94.86
	10.64	7.54	15.35	8.50	35.86	10.32	84.37
	7.75	8.17	11.23	9.71	42.26	12.31	92.77
	8.83	8.00	15.97	8.51	40.93	12.52	94.75
	9.02	8.08	13.71	10.40	42.95	10.48	94.64

A	7.55	9.82	44.48	10.57	96.52
B	6.90	9.62	14.86	9.49	41.45
C	5.80	8.54	16.05	8.34	34.29
D	5.65	7.19	11.26	8.93	31.86
E	6.45	10.99	13.46	9.09	31.87
F	8.03	10.47	12.98	10.07	45.59
G	7.88	7.40	10.93	17.19	9.74
8.20	7.53	9.55	10.85	10.01	40.16
6.58	7.32	6.42	15.38	10.23	42.39
11.03	5.16	5.46	14.27	10.40	47.64
7.08	8.12	8.12	14.27	40.30	47.47
11.49	6.06	6.06	15.44	9.19	42.12
10.31	7.32	7.32	14.48	10.16	43.60
7.17	6.71	6.42	15.35	8.43	40.30
9.95	8.28	5.16	11.25	9.57	40.30
9.00	8.11	8.28	16.79	10.41	40.30
9.00	8.11	6.94	16.55	10.13	40.30
10.51	6.42	6.42	11.56	9.28	40.30
6.54	5.66	7.17	13.06	9.42	40.30
8.41	7.16	8.28	16.33	8.30	40.30
6.40	8.03	9.00	13.43	8.51	40.30
6.91	5.39	10.31	13.37	9.93	40.30
8.88	5.47	6.42	17.08	8.74	40.30
7.12	6.94	6.54	14.05	8.26	40.30
7.96	5.69	8.41	12.46	9.61	40.30
8.90	5.31	6.40	12.46	33.51	40.30
8.50	5.37	6.91	11.89	8.28	40.30
9.01	8.14	8.88	15.01	9.20	40.30
9.54	5.93	7.12	13.38	8.34	40.30
7.92	7.17	6.94	14.77	8.39	40.30
7.96	5.69	7.96	14.77	8.74	40.30
8.90	5.31	6.23	15.74	10.16	41.60
8.50	5.37	7.26	15.72	8.17	42.68
9.01	8.14	8.88	14.13	9.47	45.25
9.48	5.93	7.12	17.47	9.46	44.72
6.71	7.17	6.94	17.47	9.46	48.98
7.92	7.17	7.92	13.47	8.58	32.26
6.23	8.25	8.90	15.74	10.16	33.40
7.26	5.96	8.90	15.74	10.16	41.60
6.83	8.33	8.50	15.72	8.17	41.60
9.01	8.14	8.88	14.13	9.47	42.68
9.48	5.93	7.12	17.47	9.46	40.58
6.71	7.17	6.71	15.36	9.48	40.78
7.92	7.17	7.92	13.47	8.58	38.27
6.23	8.25	8.90	13.47	8.39	30.12
7.26	5.96	8.90	13.47	10.00	42.68
6.83	8.33	8.50	15.74	9.97	37.85
9.01	8.14	8.88	12.97	9.09	39.07
9.48	5.93	7.12	14.91	10.27	40.58
6.71	7.17	6.71	15.36	9.48	40.78
7.92	7.17	7.92	13.47	8.39	30.12
6.23	8.25	8.90	13.47	10.36	38.20
7.26	5.96	8.90	13.47	10.67	43.65
6.83	8.33	8.50	15.74	10.67	12.07
9.01	8.14	8.88	12.97	9.97	11.77
9.48	5.93	7.12	14.91	9.47	37.85
6.71	7.17	6.71	15.36	9.83	30.99
7.92	7.17	7.92	13.47	9.83	37.84
6.23	8.25	8.90	13.47	10.36	38.20
7.26	5.96	8.90	13.47	10.67	43.65
6.83	8.33	8.50	15.74	10.67	12.07
9.01	8.14	8.88	12.97	9.97	11.77
9.48	5.93	7.12	14.91	9.47	37.85
6.71	7.17	6.71	15.36	9.83	30.99
7.92	7.17	7.92	13.47	9.83	37.84
6.23	8.25	8.90	13.47	10.36	38.20
7.26	5.96	8.90	13.47	10.67	43.65
6.83	8.33	8.50	15.74	10.67	12.07
9.01	8.14	8.88	12.97	9.97	11.77
9.48	5.93	7.12	14.91	9.47	37.85
6.71	7.17	6.71	15.36	9.83	30.99
7.92	7.17	7.92	13.47	9.83	37.84
6.23	8.25	8.90	13.47	10.36	38.20
7.26	5.96	8.90	13.47	10.67	43.65
6.83	8.33	8.50	15.74	10.67	12.07
9.01	8.14	8.88	12.97	9.97	11.77
9.48	5.93	7.12	14.91	9.47	37.85
6.71	7.17	6.71	15.36	9.83	30.99
7.92	7.17	7.92	13.47	9.83	37.84
6.23	8.25	8.90	13.47	10.36	38.20
7.26	5.96	8.90	13.47	10.67	43.65
6.83	8.33	8.50	15.74	10.67	12.07
9.01	8.14	8.88	12.97	9.97	11.77
9.48	5.93	7.12	14.91	9.47	37.85
6.71	7.17	6.71	15.36	9.83	30.99
7.92	7.17	7.92	13.47	9.83	37.84
6.23	8.25	8.90	13.47	10.36	38.20
7.26	5.96	8.90	13.47	10.67	43.65
6.83	8.33	8.50	15.74	10.67	12.07
9.01	8.14	8.88	12.97	9.97	11.77
9.48	5.93	7.12	14.91	9.47	37.85
6.71	7.17	6.71	15.36	9.83	30.99
7.92	7.17	7.92	13.47	9.83	37.84
6.23	8.25	8.90	13.47	10.36	38.20
7.26	5.96	8.90	13.47	10.67	43.65
6.83	8.33	8.50	15.74	10.67	12.07
9.01	8.14	8.88	12.97	9.97	11.77
9.48	5.93	7.12	14.91	9.47	37.85
6.71	7.17	6.71	15.36	9.83	30.99
7.92	7.17	7.92	13.47	9.83	37.84
6.23	8.25	8.90	13.47	10.36	38.20
7.26	5.96	8.90	13.47	10.67	43.65
6.83	8.33	8.50	15.74	10.67	12.07
9.01	8.14	8.88	12.97	9.97	11.77
9.48	5.93	7.12	14.91	9.47	37.85
6.71	7.17	6.71	15.36	9.83	30.99
7.92	7.17	7.92	13.47	9.83	37.84
6.23	8.25	8.90	13.47	10.36	38.20
7.26	5.96	8.90	13.47	10.67	43.65
6.83	8.33	8.50	15.74	10.67	12.07
9.01	8.14	8.88	12.97	9.97	11.77
9.48	5.93	7.12	14.91	9.47	37.85
6.71	7.17	6.71	15.36	9.83	30.99
7.92	7.17	7.92	13.47	9.83	37.84
6.23	8.25	8.90	13.47	10.36	38.20
7.26	5.96	8.90	13.47	10.67	43.65
6.83	8.33	8.50	15.74	10.67	12.07
9.01	8.14	8.88	12.97	9.97	11.77
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7.26	5.96	8.90	13.47	10.67	43.65
6.83	8.33	8.50	15.74	10.67	12.07
9.01	8.14	8.88	12.97	9.97	11.77
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6.23	8.25	8.90	13.47	10.36	38.20
7.26	5.96	8.90	13.47	10.67	43.65
6.83	8.33	8.50	15.74	10.67	12.07
9.01	8.14	8.88	12.97	9.97	11.77
9.48	5.93	7.12	14.91	9.47	37.85
6.71	7.17	6.71	15.36	9.83	30.99
7.92	7.17	7.92	13.47	9.83	37.84
6.23	8.25	8.90	13.47	10.36	38.20
7.26	5.96	8.90	13.47	10.67	43.65
6.83	8.33	8.50	15.74	10.67	12.07
9.01	8.14	8.88	12.97	9.97	11.77
9.48	5.93	7.12	14.91	9.47	37.85
6.71	7.17	6.71	15.36	9.83	30.99
7.92	7.17	7.92	13.47	9.83	37.84
6.23	8.25	8.90	13.47	10.36	38.20
7.26	5.96	8.90	13.47	10.67	43.65
6.83	8.33	8.50	15.74	10.67	12.07
9.01	8.14	8.88	12.97	9.97	11.77
9.48	5.93	7.12	14.91	9.47	37.85
6.71	7.17	6.71	15.36	9.83	30.99
7.92	7.17	7.92	13.47	9.83	37.84
6.23	8.25	8.90	13.47	10.36	38.20
7.26	5.96	8.90	13.47	10.67	43.65
6.83	8.33	8.50	15.74	10.67	12.07
9.01	8.14	8.88	12.97	9.97	11.77
9.48	5.93	7.12	14.91	9.47	37.85
6.71	7.17	6.71	15.36	9.83	30.99
7.92	7.17	7.92	13.47	9.83	37.84
6.23	8.25	8.90	13.47	10.36	38.20
7.26	5.96	8.90	13.47	10.67	43.65
6.83	8.33	8.50	15.74	10.67	12.07
9.01	8.14	8.88	12.97	9.97	11.77
9.48	5.93	7.12	14.91	9.47	37.85
6.71	7.17	6.71	15.36	9.83	30.99
7.92	7.17	7.92	13.47	9.83	37.84
6.23	8.25	8.90	13.47	10.36	38.20
7.26	5.96	8.90	13.47	10.67	43.65
6.83	8.33	8.50	15.74	10.67	12.07
9.01	8.14	8.88	12.97	9.97	11.77
9.48	5.93	7.12	14.91	9.47	37.85
6.71	7.17	6.71	15.36	9.83	30.99
7.92	7.17	7.92	13.47	9.83	37.84
6.23	8.25	8.90	13.47	10.36	38.20
7.26	5.96	8.90	13.47	10.67	43.65
6.83	8.33	8.50	15.74	10.67	12.07
9.01	8.14	8.88	12.97	9.97	11.77
9.48	5.93	7.12	14.91	9.47	37.85
6.71	7.17	6.71	15.36	9.83	30.99
7.92	7.17	7.92	13.47	9.83	37.84
6.23	8.25	8.90	13.47	10.36	38.20
7.26	5.96	8.90	13.47	10.67	43.65
6.83	8.33	8.50	15.74	10.67	12.07
9.01	8.14	8.88	12.97	9.97	11.77
9.48	5.93	7.12	14.91	9.47	37.85
6.71	7.17	6.71	15.36	9.83	30.99
7.92	7.17	7.92	13.47	9.83	37.84
6.23	8.25	8.90			

<b>A</b>	7.79	15.00	8.41	38.94	9.93	87.26
<b>B</b>	8.85	5.16	10.89	8.16	46.12	11.77
	8.74	5.44	11.73	9.69	42.72	10.32
	10.25	5.69	15.83	8.74	43.72	9.87
	7.30	6.02	11.64	9.66	36.92	12.19
	7.17	5.85	11.81	10.26	40.17	10.19
	9.68	6.07	16.83	8.74	37.92	11.98
	10.61	5.49	15.63	9.96	48.87	10.11
	9.38	5.74	14.58	9.71	36.38	12.39
	7.02	5.27	14.96	8.55	42.65	10.66
	10.61	6.61	13.09	8.45	35.49	10.84
	10.20	7.76	13.35	8.92	41.76	10.40
	11.13	8.28	10.70	9.16	47.53	11.04
	6.32	6.08	12.46	8.93	42.96	9.96
	6.58	6.59	14.22	10.61	41.44	9.92
	8.94	7.89	13.51	8.74	47.87	11.60
	6.23	5.37	12.22	10.45	37.13	11.15
	10.48	5.49	14.57	9.66	45.44	10.29
	8.24	5.84	14.30	10.41	39.54	10.28
	6.50	5.43	15.79	9.86	38.09	9.71
	6.82	5.54	12.07	9.15	39.16	12.28
	7.43	7.45	15.14	10.17	39.74	9.83
	10.71	7.26	10.82	8.25	40.39	12.14
	9.97	5.54	12.47	8.19	45.29	10.02
	9.82	7.35	11.08	9.41	47.05	10.68
	10.99	5.74	14.20	9.33	46.35	11.44
	6.22	7.36	15.84	9.15	36.76	12.09
	9.79	8.04	16.53	9.39	42.64	12.58
	7.79	5.84	16.70	8.39	47.26	10.60
	10.47	5.79	15.79	10.58	36.41	10.83
	9.22	8.01	12.98	10.16	31.00	11.24
	8.66	5.23	11.22	9.15	31.49	12.00
	6.62	6.09	15.14	9.97	40.63	9.73
	8.43	5.19	11.87	14.61	10.16	10.68
	8.87	7.32	14.61	12.20	10.55	44.35
	7.75	5.18	12.20	10.13	49.52	10.28
	6.25	5.34	12.42	17.18	46.26	9.73
	6.69	6.27	11.22	9.26	45.68	12.41
	6.62	6.07	15.49	8.30	31.26	10.71
	11.02	7.31	10.69	10.11	42.48	10.40
	9.27	7.28	16.31	9.65	44.75	10.10
	9.04	7.78	10.86	8.85	36.38	10.14
	8.43	5.19	11.87	8.55	36.03	12.39
	10.54	6.15	12.26	9.13	49.52	10.28
	8.00	5.68	14.06	9.66	33.26	11.89
	9.33	8.08	16.35	10.07	48.15	12.37
	9.59	5.16	14.89	9.45	44.09	11.59
	9.49	8.22	17.41	8.86	35.67	12.18
	7.31	7.47	12.96	10.44	34.51	12.46

A	10.04	5.62	10.92	9.49	35.71	12.68	84.46
B	10.19	7.97	15.02	10.66	33.54	9.72	87.10
C	7.77	7.55	15.08	10.33	32.08	11.20	84.02
D	11.30	5.71	12.04	8.71	31.56	12.25	81.57
E	8.33	8.31	12.41	9.62	43.89	12.01	94.57
F	11.46	7.07	11.11	9.49	44.92	10.52	89.82
G	6.71	11.48	7.44	13.31	9.29	44.73	11.18
	7.66	5.32	15.31	8.60	45.34	12.00	94.23
	7.42	8.00	14.84	8.38	44.03	10.53	93.20
	7.02	5.46	11.69	9.92	40.57	11.23	90.32
	8.54	5.35	15.10	9.31	40.04	11.52	89.85
	8.03	5.68	12.82	9.54	38.69	9.73	84.48
	7.43	5.31	13.08	9.29	43.03	11.64	89.79
	7.33	5.28	16.81	9.26	48.54	12.02	98.93
	11.52	5.51	13.88	10.66	46.11	9.84	97.53
	10.61	8.06	13.36	8.63	31.70	11.59	83.96
	8.46	6.24	14.66	9.80	35.29	11.58	86.04
	7.48	7.33	11.52	9.04	43.32	10.08	88.76
	9.36	8.28	14.97	8.29	34.06	12.40	87.35
	9.36	8.28	14.97	8.29	34.06	12.40	87.35
	8.66	6.12	15.27	8.90	45.82	11.58	96.35
	7.48	5.53	14.40	10.40	43.69	11.57	93.08
	7.92	7.54	16.40	10.37	42.19	12.61	97.03
	6.68	6.63	12.14	10.55	34.24	11.73	81.97
	8.34	5.77	16.41	10.57	42.16	12.55	95.80
	9.72	6.85	16.32	10.46	48.27	10.71	102.34
	9.11	6.81	13.32	10.45	48.10	9.83	97.61
	6.17	6.71	13.12	8.78	45.16	11.70	91.63
	7.48	5.28	13.83	10.34	43.85	12.70	93.48
	9.92	7.09	16.86	8.98	44.00	11.58	98.43
	9.38	7.81	12.57	10.67	44.95	11.77	97.15
	8.40	6.91	11.87	8.44	45.02	9.78	90.42
	9.58	5.48	15.43	9.01	38.31	12.45	90.25
	10.93	6.10	14.53	9.92	47.32	12.65	101.46
	8.01	6.60	11.81	9.53	31.14	11.60	78.69
	10.97	8.02	14.76	9.30	44.08	10.17	97.29
	9.22	5.85	15.42	10.37	38.88	10.99	90.73
	11.50	7.91	14.01	10.43	35.96	11.74	91.56
	9.69	5.68	16.88	9.46	33.84	11.93	85.34
	7.55	5.30	12.85	9.76	44.18	10.70	93.65
	7.75	8.10	14.43	9.50	38.11	11.34	89.23
	6.30	6.88	15.62	10.47	46.84	11.18	97.29
	9.45	6.02	12.34	9.92	32.02	12.20	81.95
	9.69	7.45	12.28	9.86	46.93	11.97	98.18
	10.47	7.90	15.53	10.44	40.26	11.37	95.97
	9.56	6.62	16.06	9.17	44.44	11.90	97.75

A	B	C	D	E	F	G
8.74	6.39	11.72	9.93	34.17	12.26	83.20
10.54	7.26	13.22	10.03	36.60	11.92	89.56
7.97	7.63	16.39	8.14	32.74	10.19	83.05
6.41	7.30	15.75	10.53	48.07	12.19	100.26
8.11	6.11	11.92	8.92	39.98	11.80	86.83
7.15	5.88	11.36	8.69	41.62	10.47	85.17
9.17	5.80	10.92	9.08	32.30	10.33	77.60
9.50	6.65	14.64	10.43	34.76	10.53	86.51
11.10	6.08	12.31	8.62	46.25	11.96	96.32
6.66	6.50	11.48	8.36	44.87	12.48	90.37
10.78	7.79	13.34	8.70	43.91	10.03	94.55
10.79	5.63	13.51	9.95	41.49	10.64	92.01
10.87	7.56	11.58	8.31	47.55	12.35	98.22
6.56	6.00	13.00	8.35	39.14	9.76	82.80

**A.9****MICAP ISSUES**

The following pages contain the raw data collected during the process flow/time and motion effort for the MICAP issue process. The process flow is depicted in Section 6, Figure 6-9. A composite of the raw data collected for the process is provided in Section 6, Table 6-9. Raw data displayed represent actual times captured (in seconds) for each observed occurrence of the process (rows) and correlate to individual process steps (columns) as follows:

<u>Column</u>	<u>Process Step</u>
<b>A</b>	Receive MICAP issue document
<b>B</b>	Stamp MICAP priority on document
<b>C</b>	Verify document against materiel
<b>D</b>	Sign and date document
<b>E</b>	Pull and move materiel to pick-up and delivery
<b>F</b>	Time stamp document
<b>G</b>	Enter in MICAP control log
<b>H</b>	Forward document to document control
<b>I</b>	Composite/total of all process steps

**MICAP Issue**

<b>A</b>	9.43	7.62	8.94	39.78	4.56	15.03	10.47	112.22
	10.54	5.85	10.34	48.69	4.56	14.73	11.62	117.08
	10.06	6.22	17.33	34.92	4.31	17.42	10.29	110.25
	8.87	6.27	16.41	9.29	36.54	4.65	16.74	111.12
	6.49	8.01	11.52	9.33	48.82	4.56	18.27	10.11
	8.51	8.07	13.93	9.99	30.51	4.28	17.35	10.71
	8.48	7.85	10.70	9.92	47.10	4.80	14.82	10.75
	8.74	5.24	12.30	8.77	44.37	4.53	18.86	114.40
	9.60	6.38	11.40	9.27	38.89	4.60	17.66	113.49
	7.40	7.78	16.82	9.18	31.87	4.64	16.31	108.51
	10.26	6.07	15.10	10.55	37.40	4.58	14.73	104.31
	10.59	5.88	15.75	9.08	42.29	4.62	16.58	110.68
	7.83	5.89	16.71	9.30	45.33	4.41	18.35	117.56
	9.18	5.32	16.37	9.27	42.35	4.69	17.55	12.09
	10.11	7.74	12.53	8.87	43.91	4.33	15.36	119.90
	6.59	6.76	13.10	10.01	32.68	4.43	17.36	12.81
	7.31	6.88	15.14	8.38	32.75	4.86	16.55	12.10
	7.74	6.16	14.87	9.27	43.56	4.85	16.32	117.22
	10.98	7.34	15.43	10.25	39.83	4.69	16.40	10.31
	7.65	6.74	17.32	10.22	47.43	4.31	15.05	10.68
	10.59	6.70	14.32	10.51	49.41	4.71	18.10	103.74
	6.76	6.50	15.45	8.21	32.87	4.35	17.69	103.98
	8.06	6.31	13.90	9.06	46.72	4.62	16.02	117.08
	7.86	5.32	15.53	9.65	40.87	4.55	16.98	12.29
	11.25	6.62	12.34	8.87	33.47	4.45	15.05	115.70
	8.48	7.79	11.04	8.82	45.03	4.80	18.95	121.08
	6.33	5.30	11.03	10.43	35.56	4.65	18.20	124.93
	11.26	5.82	13.58	8.85	47.28	4.83	17.12	10.59
	9.07	5.77	12.66	9.61	31.66	4.33	18.58	10.59
	6.21	8.20	10.84	9.74	34.35	4.88	15.21	10.09
	11.38	6.92	15.98	8.92	33.10	4.70	18.98	10.09
	8.78	6.41	17.41	9.51	39.61	4.62	15.39	10.09
	9.86	6.06	11.90	9.92	31.63	4.26	16.92	10.09
	6.95	5.85	10.89	10.65	45.26	4.36	15.46	10.09
	6.34	7.71	14.80	8.30	47.42	4.46	17.79	10.09
	10.73	6.99	17.57	10.18	41.49	4.39	18.98	10.09
	10.39	5.72	15.48	9.69	44.18	4.25	18.47	11.38
	7.50	7.59	14.25	8.94	39.09	4.44	16.73	10.38
	9.92	6.13	11.73	9.10	37.45	4.65	15.62	10.38
	7.27	6.72	15.51	9.30	36.53	4.51	14.85	10.38
	6.52	5.66	10.97	8.43	33.67	4.65	15.12	10.38
	6.10				39.20	4.44	17.10	10.38
								110.62

<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>G</b>	<b>H</b>	<b>I</b>
11.15	7.42	14.84	8.73	34.20	4.52	17.49	11.45	109.80
9.31	6.63	14.85	10.02	47.55	4.59	15.39	11.23	119.56
8.50	6.62	15.38	10.00	30.69	4.56	15.11	11.57	102.44
9.73	8.29	15.36	10.55	49.21	4.36	17.60	11.37	126.48
11.14	7.08	12.53	9.35	46.01	4.81	14.93	12.34	118.19
6.39	5.15	11.55	10.11	39.77	4.51	14.80	11.76	104.04
6.79	8.24	11.22	10.32	37.93	4.56	15.50	11.53	106.09
7.13	8.16	12.71	8.43	44.51	4.48	16.78	10.96	113.16
10.64	5.65	12.93	8.70	48.48	4.44	18.03	12.69	121.56
11.53	5.78	12.93	9.33	45.14	4.39	18.33	9.97	117.40
6.35	5.40	11.37	8.74	47.45	4.42	15.78	10.73	110.23
7.15	7.64	13.44	10.41	41.67	4.40	16.56	10.99	111.35
11.23	7.78	17.24	9.38	32.00	4.62	16.84	10.79	109.87
10.86	6.36	14.08	8.33	33.36	4.44	17.36	10.67	105.48
10.86	6.02	14.24	9.84	31.88	4.74	17.16	12.25	106.99
10.48	7.96	14.65	9.18	44.79	4.80	15.09	12.12	119.07
10.79	7.16	14.15	10.35	47.88	4.29	14.96	11.73	121.31
9.90	7.65	16.14	9.28	44.84	4.48	17.14	12.31	121.74
9.58	8.05	12.82	8.62	33.40	4.46	16.23	12.70	105.87
11.34	5.42	16.16	10.00	44.14	4.34	17.28	12.05	120.74
6.54	7.85	13.42	8.85	31.76	4.82	17.14	10.44	100.84
8.72	5.94	14.96	8.52	43.10	4.39	15.96	11.81	113.39
8.21	8.27	12.15	9.37	49.21	4.67	18.81	12.04	122.72
6.84	7.62	16.89	8.75	36.92	4.80	16.16	10.09	108.06
9.90	5.53	17.54	9.71	36.67	4.71	17.12	11.47	112.64
6.56	7.27	13.25	10.05	38.13	4.35	18.30	11.82	109.73
6.21	7.64	14.60	8.88	47.79	4.74	15.16	12.79	117.81
9.57	6.83	17.23	10.39	47.79	4.89	15.99	10.59	123.27
6.82	5.15	11.59	9.41	39.28	4.86	18.79	12.09	107.99
10.07	8.03	16.55	10.58	31.98	4.50	15.80	12.18	109.67
9.34	5.74	15.30	9.17	37.53	4.51	18.67	11.91	112.18
6.83	7.28	10.85	9.64	37.68	4.85	14.83	13.00	104.97
7.05	6.56	10.78	10.48	32.31	4.78	14.84	10.53	97.34
10.49	7.91	11.60	10.20	42.53	4.65	18.45	12.39	118.22
9.74	5.64	15.98	10.54	33.10	4.44	17.50	10.26	107.21
6.86	5.18	16.15	9.52	36.48	4.50	18.37	10.87	107.92
7.02	5.96	13.55	9.86	46.00	4.63	15.76	10.99	113.77
11.16	7.03	16.70	10.48	38.47	4.76	17.35	12.81	118.76
6.85	6.63	14.59	9.05	47.22	4.79	16.69	10.99	116.80
10.32	7.29	11.86	8.44	36.69	4.74	17.20	10.72	107.26
8.37	7.74	12.05	9.57	41.06	4.89	18.71	12.15	114.55
6.68	6.86	11.52	9.09	42.79	4.29	16.19	11.24	108.66
6.81	5.39	17.45	9.76	41.10	4.32	17.38	10.73	112.94
9.85	7.08	11.19	10.65	39.60	4.65	16.65	12.01	111.67
9.60	7.90	9.29	17.02	33.86	4.81	17.40	12.35	112.24

<b>A</b>	6.69	5.35	15.05	10.59	37.90	4.41	17.66	107.89
<b>B</b>	7.06	5.56	8.29	48.90	4.28	15.58	12.86	118.11
<b>C</b>	8.52	6.51	8.18	31.14	4.35	18.91	12.03	101.49
<b>D</b>	11.06	5.56	11.84	48.79	4.87	19.03	10.50	120.88
<b>E</b>	6.47	6.82	17.51	8.30	49.04	4.32	14.92	12.20
<b>F</b>	10.84	5.30	11.17	9.26	38.69	4.63	18.72	12.08
<b>G</b>	7.11	6.88	16.38	10.69	30.92	4.77	18.59	11.12
<b>H</b>	10.09	7.43	17.17	9.28	37.51	4.70	16.11	12.76
<b>I</b>	8.75	5.26	14.14	10.45	38.13	4.80	18.86	11.75
<b>J</b>	9.17	7.84	13.81	8.14	33.42	4.33	15.70	11.51
<b>K</b>	6.46	5.16	14.43	8.64	45.29	4.53	18.36	11.90
<b>L</b>	6.62	5.66	16.67	10.50	34.49	4.26	14.92	10.61
<b>M</b>	6.36	7.32	13.20	9.00	31.52	4.28	18.81	12.46
<b>N</b>	11.07	6.88	11.14	9.10	31.30	4.89	17.77	10.48
<b>O</b>	10.53	7.52	11.48	8.67	41.13	4.84	17.86	12.84
<b>P</b>	6.71	8.16	11.82	10.18	47.16	4.82	17.29	12.36
<b>Q</b>	8.41	7.31	11.70	8.42	33.51	4.72	16.41	10.58
<b>R</b>	6.29	7.82	11.80	8.90	43.39	4.63	15.09	10.15
<b>S</b>	8.88	6.29	12.57	9.72	34.26	4.87	14.99	12.85
<b>T</b>	9.83	8.20	11.13	8.45	30.20	4.83	18.47	12.76
<b>U</b>	8.08	6.11	16.66	9.25	33.95	4.46	17.88	10.61
<b>V</b>	7.22	5.79	16.08	9.40	43.61	4.59	17.51	10.85
<b>W</b>	10.85	5.37	15.75	8.29	47.77	4.34	16.68	11.12
<b>X</b>	11.17	7.52	14.62	9.28	44.71	4.92	17.99	10.76
<b>Y</b>	6.44	6.00	13.74	9.74	37.92	4.28	18.34	11.91
<b>Z</b>	11.30	6.26	11.29	9.27	46.63	4.52	16.46	11.00
<b>AA</b>	9.65	5.94	11.41	10.02	39.25	4.50	18.19	11.19
<b>BB</b>	7.01	7.94	12.25	9.42	32.87	4.80	18.34	10.98
<b>CC</b>	7.18	5.76	16.52	9.43	42.05	4.80	17.52	11.82
<b>DD</b>	9.72	5.18	12.01	10.45	38.57	4.45	17.82	11.45
<b>EE</b>	8.51	5.18	14.59	10.20	39.19	4.90	18.09	12.81
<b>FF</b>	6.38	7.44	16.08	9.20	40.92	4.31	15.10	12.55
<b>GG</b>	7.75	5.51	13.85	9.46	32.41	4.80	18.44	10.23
<b>HH</b>	9.33	6.93	13.87	10.02	46.19	4.48	18.96	11.41
<b>II</b>	9.31	5.88	11.20	8.83	39.84	4.70	16.31	11.29
<b>JJ</b>	8.54	8.04	16.07	9.82	49.49	4.93	18.94	12.31
<b>KK</b>	11.19	6.23	16.62	8.77	31.31	4.55	17.69	12.12
<b>LL</b>	8.54	8.18	11.08	9.39	39.64	4.91	17.46	11.98
<b>MM</b>	6.79	7.45	14.45	8.14	49.22	4.31	18.97	10.52
<b>NN</b>	8.02	6.89	14.54	8.52	44.94	4.59	18.16	12.35
<b>OO</b>	8.67	7.57	13.45	8.50	35.86	4.32	14.94	11.15
<b>PP</b>	10.62	6.45	10.90	10.22	42.26	4.76	14.87	10.73
<b>QQ</b>	8.85	7.48	17.04	9.49	43.56	4.56	16.75	12.09
<b>RR</b>	8.58	5.17	13.36	8.87	31.21	4.85	17.54	11.90
<b>SS</b>	10.64	7.54	15.35	9.06	46.32	4.43	15.22	11.61
<b>TT</b>	8.17	11.23	9.71	34.18	4.33	16.54	11.11	103.03
<b>UU</b>	8.83	8.00	15.97	8.51	40.93	4.42	17.35	12.98
<b>VV</b>	9.02	8.08	13.71	10.40	42.95	4.38	17.17	10.36
<b>WW</b>								116.07

<b>A</b>	7.55	6.90	9.19	17.19	9.82	44.48	4.50	17.10	119.60
<b>B</b>	9.62	5.80	14.86	9.49	41.45	4.50	18.50	11.95	116.18
<b>C</b>	8.54	5.65	16.05	8.34	34.29	4.77	14.79	10.90	103.33
<b>D</b>	7.19	6.45	11.26	8.93	31.86	4.56	15.29	11.92	97.44
<b>E</b>	10.99	8.03	13.46	9.09	31.87	4.40	17.81	11.85	107.50
<b>F</b>	10.47	6.75	12.98	10.07	45.59	4.37	18.72	12.26	121.20
<b>G</b>	7.40	8.29	17.19	9.74	35.70	4.56	16.50	11.96	111.35
<b>H</b>	8.20	7.53	10.85	10.01	47.64	4.35	17.93	11.71	118.23
<b>I</b>	7.88	7.32	15.38	10.23	43.60	4.64	17.79	10.61	117.44
<b>J</b>	8.12	5.46	14.27	10.40	40.30	4.33	15.91	12.96	111.75
<b>K</b>	10.93	6.06	15.44	9.19	44.97	4.73	16.48	11.35	119.16
<b>L</b>	9.55	7.32	14.48	10.16	42.39	4.60	15.35	10.73	114.58
<b>M</b>	6.58	6.42	15.35	8.43	47.47	4.94	15.59	12.14	116.94
<b>N</b>	11.03	5.16	11.25	9.57	42.12	4.26	15.60	12.74	111.73
<b>O</b>	7.08	6.19	16.79	10.41	33.71	4.32	19.01	12.14	109.65
<b>P</b>	11.49	6.94	16.55	10.13	33.86	4.72	18.66	11.15	113.49
<b>Q</b>	10.31	6.18	11.56	9.28	32.93	4.49	15.29	11.03	101.07
<b>R</b>	7.17	6.71	13.06	9.42	44.79	4.81	18.14	10.62	114.72
<b>S</b>	9.95	8.28	16.33	8.30	35.79	4.52	18.31	11.08	112.56
<b>T</b>	9.00	8.11	13.43	8.51	33.75	4.26	18.73	12.73	108.59
<b>U</b>	10.51	6.42	13.37	9.93	40.07	4.79	17.07	11.65	113.81
<b>V</b>	6.54	5.66	17.08	8.74	37.90	4.55	17.64	10.90	109.01
<b>W</b>	8.41	7.16	14.05	8.26	31.95	4.85	17.50	10.85	103.04
<b>X</b>	6.40	8.03	12.46	9.61	33.51	4.61	16.74	12.88	104.24
<b>Y</b>	6.91	5.39	11.89	8.28	47.27	4.52	18.00	12.54	114.79
<b>Z</b>	8.88	5.47	15.01	9.20	45.25	4.91	17.17	12.53	118.42
<b>AA</b>	7.12	6.94	13.38	8.34	32.26	4.45	16.81	10.28	99.58
<b>BB</b>	7.96	5.69	14.77	8.39	33.40	4.56	19.01	12.76	106.55
<b>CC</b>	8.90	5.31	15.74	10.16	41.60	4.65	18.39	11.63	116.37
<b>DD</b>	8.50	5.37	15.72	8.17	38.04	4.38	18.49	10.37	109.04
<b>EE</b>	9.01	8.14	14.13	9.47	44.72	4.28	15.26	11.39	116.38
<b>FF</b>	9.54	5.93	17.47	9.46	48.98	4.77	15.50	10.21	121.86
<b>GG</b>	6.23	8.25	13.47	8.58	38.27	4.47	18.70	12.18	110.16
<b>HH</b>	7.26	5.96	13.77	10.00	42.68	4.77	18.47	12.80	115.71
<b>II</b>	6.83	8.33	12.97	9.09	39.07	4.44	18.87	11.83	111.45
<b>JJ</b>	9.48	8.16	14.91	10.27	40.58	4.81	15.43	12.06	115.69
<b>KK</b>	7.92	7.17	15.36	9.48	40.78	4.36	16.60	10.95	112.63
<b>LL</b>	6.57	5.56	11.90	8.39	30.12	4.83	19.01	12.24	98.61
<b>MM</b>	8.11	7.56	14.05	9.97	37.85	4.65	17.68	11.46	111.31
<b>NN</b>	10.56	7.76	13.97	9.47	30.99	4.33	15.06	10.47	102.59
<b>OO</b>	6.71	7.18	17.23	9.83	37.84	4.49	15.75	12.87	111.91
<b>PP</b>	6.85	6.58	16.83	10.36	38.20	4.80	16.03	10.47	110.11
<b>QQ</b>	8.55	8.19	15.14	10.67	43.65	4.38	16.85	10.37	117.80
<b>RR</b>	8.56	7.62	12.76	8.17	45.10	4.73	15.65	11.09	113.69
<b>SS</b>	7.42	7.75	17.13	9.70	47.14	4.75	18.82	10.59	123.29
<b>TT</b>	7.66	5.58	13.75	9.56	37.42	4.78	18.96	11.03	108.74
<b>UU</b>	6.86	5.63	17.56	10.44	31.60	4.66	18.75	12.97	108.47
<b>VV</b>	9.66	5.81	13.75	10.26	40.60	4.56	16.43	12.69	113.76

<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>G</b>	<b>H</b>	<b>I</b>
7.79	7.19	15.00	8.41	38.94	4.44	18.52	11.13	111.41
8.85	5.16	10.89	8.16	46.12	4.46	18.49	10.89	113.02
8.74	5.44	11.73	9.69	42.72	4.83	16.22	10.23	109.60
10.25	5.69	15.83	8.74	43.72	4.37	17.88	11.34	117.81
7.30	6.02	11.64	9.66	36.92	4.92	14.82	10.90	102.18
7.17	5.85	11.81	10.26	40.17	4.75	16.81	10.38	107.20
9.68	6.07	16.83	8.74	37.92	4.78	15.51	12.61	112.14
10.61	5.49	15.63	9.96	48.87	4.78	16.03	11.76	123.14
9.38	5.74	14.58	9.71	36.38	4.53	17.78	10.75	108.84
7.02	5.27	14.95	8.55	42.65	4.74	17.05	11.78	112.02
10.61	6.61	13.09	8.45	35.49	4.47	17.50	12.00	108.22
10.20	7.76	13.35	8.92	41.76	4.54	18.17	12.83	117.52
11.13	8.28	10.70	9.16	47.53	4.92	17.47	11.73	120.92
6.32	6.08	12.46	8.93	42.96	4.75	15.98	12.83	110.31
6.58	6.59	14.22	10.61	41.44	4.78	18.54	11.01	113.78
8.94	7.89	13.51	8.74	47.87	4.41	17.26	12.60	121.22
6.23	5.37	12.22	10.45	37.13	4.42	16.12	12.34	104.28
10.48	5.49	14.57	9.66	45.44	4.86	14.73	11.04	116.27
8.24	5.84	14.30	10.41	39.54	4.58	17.19	12.97	113.07
6.50	5.43	15.79	9.86	38.09	4.45	17.84	11.84	109.81
6.82	5.54	12.07	9.15	39.16	4.69	15.97	12.23	105.64
7.43	7.45	15.14	10.17	39.74	4.90	17.06	11.34	113.24
10.71	7.26	10.82	8.25	40.39	4.61	15.50	11.96	109.50
9.97	5.54	12.47	8.19	45.29	4.83	18.20	10.70	115.20
9.82	7.35	11.08	9.41	47.05	4.77	18.15	11.70	119.33
10.99	5.74	14.20	9.33	46.35	4.57	15.97	12.55	119.70
6.22	7.36	15.84	9.15	36.76	4.85	15.31	10.16	105.66

The following pages contain the raw data collected during the process flow/time and motion effort for the shipment process. The process flow is depicted in Section 6, Figure 6-10. A composite of the raw data collected for the process is provided in Section 6, Table 6-10. Raw data displayed represent actual times captured (in seconds) for each observed occurrence of the process (rows) and correlate to individual process steps (columns) as follows:

**Column Process Step**

- A** Receive/stamp shipping document — locate materiel
- B** Verify data/pull materiel
- C** Sign and date document — forward to inspection
- D** Inspect item — move materiel to pick-up and delivery
- E** Composite/total of all process steps

Shipments					
A	B	C	D	E	
B	C	D	E	A	B
69.24	33.74	10.89	49.51	163.37	9.69
57.32	25.58	9.70	39.43	132.03	10.72
74.53	47.85	11.08	60.92	194.38	10.53
68.87	42.66	10.87	26.21	148.61	43.44
57.86	40.68	10.38	58.95	167.87	
62.86	29.55	9.47	50.77	152.65	
62.70	38.83	8.76	33.85	144.14	
71.74	36.88	11.24	35.09	154.95	
60.89	32.04	10.07	35.46	138.46	
73.96	33.25	9.80	32.93	149.94	
69.22	36.87	9.98	35.96	152.02	
70.52	35.66	9.97	47.41	163.56	
57.55	46.91	10.54	42.57	157.56	
59.17	24.13	9.66	42.69	135.66	
57.12	52.44	9.71	42.80	162.07	
57.82	29.11	11.05	44.27	142.24	
61.52	39.14	8.90	35.51	145.06	
64.35	36.75	9.27	49.79	160.15	
64.46	23.50	8.92	40.35	137.22	
74.50	45.34	8.77	61.61	190.22	
75.29	49.48	10.77	55.92	191.46	
75.00	30.58	10.98	30.21	146.77	
57.51	25.42	10.75	32.87	126.55	
75.22	24.95	9.33	48.46	157.95	
71.19	38.90	9.42	47.04	166.55	
60.35	29.11	8.92	49.78	148.16	
58.46	31.50	10.39	42.38	142.73	
70.23	26.77	10.02	39.02	146.05	
72.43	27.18	10.30	49.66	159.57	
67.11	43.37	11.21	63.44	185.12	
69.38	37.00	9.72	52.00	168.10	
59.80	30.36	10.17	39.42	139.75	
69.91	46.10	10.64	31.03	157.68	
65.18	34.31	11.17	51.18	161.85	
67.82	35.49	9.84	39.37	152.52	
56.07	33.33	8.99	55.80	154.19	
70.04	44.75	10.57	61.28	186.64	
61.04	41.16	9.63	49.19	161.02	
62.71	45.31	10.51	50.10	168.63	
74.33	43.46	8.92	39.10	165.81	
65.56	26.86	10.25	41.37	144.05	

**A.11****MATERIEL DELIVERY**

The following pages contain the raw data collected during the process flow/time and motion effort for the materiel/item delivery process. The process flow is depicted in Section 6, Figure 6-11. A composite of the raw data collected for the process is provided in Section 6, Table 6-11. Raw data displayed represent actual times captured (in seconds) for each observed occurrence of the process (rows) and correlate to individual process steps (columns) as follows:

<u>Column</u>	<u>Process Step</u>
A	Verify document and materiel
B	Deliver materiel — obtain customer signature/date
C	Forward documents to document control
D	Composite/total of all process steps

Deliver Items to Customer				
A	B	C	D	E
22.68	206.09	11.85	240.61	34.00
22.70	78.49	9.12	110.31	30.04
23.48	148.61	12.86	184.95	29.16
30.38	187.95	12.16	230.49	33.50
19.90	156.56	11.60	188.06	28.95
28.19	246.65	10.25	285.09	35.63
33.86	138.93	8.56	181.34	32.82
25.95	203.20	11.17	240.32	24.67
28.67	251.28	12.96	292.91	30.77
21.17	66.48	11.57	99.22	21.07
21.90	124.42	9.77	156.10	35.60
21.83	148.04	11.99	181.85	28.15
33.33	109.80	12.65	155.78	30.11
18.77	119.68	10.16	148.61	19.69
28.33	140.35	10.74	179.42	28.81
31.57	66.84	10.11	108.51	24.03
21.10	211.85	10.77	243.72	33.23
23.44	153.11	12.01	188.56	26.30
33.96	47.74	12.02	93.72	19.33
35.14	80.97	9.31	125.42	26.94
25.98	251.62	11.33	288.92	18.77
34.55	137.22	11.26	183.03	20.78
23.88	48.74	8.94	81.56	35.12
36.26	189.62	9.25	235.14	23.34
23.08	235.19	12.49	270.77	24.27
18.89	167.08	9.91	195.88	31.18
21.01	122.02	12.67	155.70	28.88
23.80	161.62	11.49	196.91	23.82
31.15	255.51	11.51	298.17	33.86
29.21	249.78	12.65	291.65	32.77
26.85	143.79	12.98	183.62	27.04
26.20	246.14	8.62	280.96	33.91
26.38	179.85	12.12	218.36	35.85
31.42	138.48	10.58	180.48	18.88
33.68	204.52	8.67	246.87	27.91
30.04	218.85	9.05	257.94	34.55
25.58	186.56	12.33	224.47	30.50
19.99	152.83	12.91	185.73	22.50
31.06	192.83	11.31	235.20	21.63
35.03	194.72	10.03	239.78	18.65
31.35	196.19	9.61	237.14	19.01
29.25	199.56	8.95	237.76	33.29

D	C	B	A
77.34	9.69	45.06	22.59
191.82	9.16	156.96	25.70
148.34	10.39	108.20	29.75
106.06	9.41	72.25	24.40
278.68	12.67	245.90	20.11
77.51	10.90	38.75	27.86
210.91	8.72	170.30	31.89
162.14	11.81	124.80	25.53

C	B	A
9.69	10.48	104.52
191.82	9.46	136.16
148.34	136.90	136.90
106.06	10.92	102.27
278.68	12.67	200.35
77.51	11.72	96.52
210.91	11.72	221.74
162.14	13.02	180.51

A	D	B	C
22.59	88.08	12.24	41.84
19.46	164.28	12.99	121.25
10.90	191.07	11.12	150.79
12.67	259.86	10.04	216.32
20.11	280.18	10.56	240.68
10.39	95.91	12.41	47.87
10.92	135.84	10.59	204.76
11.39	141.97	10.27	156.35
12.67	165.25	11.29	192.31
20.04	124.80	11.44	252.71
11.39	104.52	11.44	294.93
10.92	30.29	11.19	139.56
10.39	97.16	8.45	90.54
10.92	70.31	9.70	144.36
10.82	220.10	11.36	164.69
10.84	204.94	8.43	186.02
10.84	190.89	9.77	168.92
10.84	19.75	12.34	48.86
10.84	217.72	11.19	184.65
10.84	127.45	11.36	164.69
10.84	10.86	12.42	144.36
10.84	242.20	11.44	245.48
10.84	19.75	12.34	46.31
10.84	67.31	10.82	76.45
10.84	188.77	10.82	197.33
10.84	105.73	10.89	235.16
10.84	10.49	12.34	92.22
10.84	124.20	11.44	243.72
10.84	10.55	12.34	46.31
10.84	262.81	11.44	204.99
10.84	19.75	12.34	80.89
10.84	10.86	12.42	144.36
10.84	233.51	11.44	252.71
10.84	10.55	12.34	46.31
10.84	294.80	11.44	294.93
10.84	10.55	12.34	80.89
10.84	232.35	11.44	164.69
10.84	10.49	12.34	144.36
10.84	161.06	11.44	243.72
10.84	12.42	11.44	245.48
10.84	10.49	12.34	46.31
10.84	236.44	11.44	294.93
10.84	10.55	12.34	80.89
10.84	294.80	11.44	294.93
10.84	10.55	12.34	80.89
10.84	232.35	11.44	164.69
10.84	10.49	12.34	144.36
10.84	161.06	11.44	243.72
10.84	12.42	11.44	245.48
10.84	10.49	12.34	46.31
10.84	236.44	11.44	294.93
10.84	10.55	12.34	80.89
10.84	294.80	11.44	294.93
10.84	10.55	12.34	80.89
10.84	232.35	11.44	164.69
10.84	10.49	12.34	144.36
10.84	161.06	11.44	243.72
10.84	12.42	11.44	245.48
10.84	10.49	12.34	46.31
10.84	236.44	11.44	294.93
10.84	10.55	12.34	80.89
10.84	294.80	11.44	294.93
10.84	10.55	12.34	80.89
10.84	232.35	11.44	164.69
10.84	10.49	12.34	144.36
10.84	161.06	11.44	243.72
10.84	12.42	11.44	245.48
10.84	10.49	12.34	46.31
10.84	236.44	11.44	294.93
10.84	10.55	12.34	80.89
10.84	294.80	11.44	294.93
10.84	10.55	12.34	80.89
10.84	232.35	11.44	164.69
10.84	10.49	12.34	144.36
10.84	161.06	11.44	243.72
10.84	12.42	11.44	245.48
10.84	10.49	12.34	46.31
10.84	236.44	11.44	294.93
10.84	10.55	12.34	80.89
10.84	294.80	11.44	294.93
10.84	10.55	12.34	80.89
10.84	232.35	11.44	164.69
10.84	10.49	12.34	144.36
10.84	161.06	11.44	243.72
10.84	12.42	11.44	245.48
10.84	10.49	12.34	46.31
10.84	236.44	11.44	294.93
10.84	10.55	12.34	80.89
10.84	294.80	11.44	294.93
10.84	10.55	12.34	80.89
10.84	232.35	11.44	164.69
10.84	10.49	12.34	144.36
10.84	161.06	11.44	243.72
10.84	12.42	11.44	245.48
10.84	10.49	12.34	46.31
10.84	236.44	11.44	294.93
10.84	10.55	12.34	80.89
10.84	294.80	11.44	294.93
10.84	10.55	12.34	80.89
10.84	232.35	11.44	164.69
10.84	10.49	12.34	144.36
10.84	161.06	11.44	243.72
10.84	12.42	11.44	245.48
10.84	10.49	12.34	46.31
10.84	236.44	11.44	294.93
10.84	10.55	12.34	80.89
10.84	294.80	11.44	294.93
10.84	10.55	12.34	80.89
10.84	232.35	11.44	164.69
10.84	10.49	12.34	144.36
10.84	161.06	11.44	243.72
10.84	12.42	11.44	245.48
10.84	10.49	12.34	46.31
10.84	236.44	11.44	294.93
10.84	10.55	12.34	80.89
10.84	294.80	11.44	294.93
10.84	10.55	12.34	80.89
10.84	232.35	11.44	164.69
10.84	10.49	12.34	144.36
10.84	161.06	11.44	243.72
10.84	12.42	11.44	245.48
10.84	10.49	12.34	46.31
10.84	236.44	11.44	294.93
10.84	10.55	12.34	80.89
10.84	294.80	11.44	294.93
10.84	10.55	12.34	80.89
10.84	232.35	11.44	164.69
10.84	10.49	12.34	144.36
10.84	161.06	11.44	243.72
10.84	12.42	11.44	245.48
10.84	10.49	12.34	46.31
10.84	236.44	11.44	294.93
10.84	10.55	12.34	80.89
10.84	294.80	11.44	294.93
10.84	10.55	12.34	80.89
10.84	232.35	11.44	164.69
10.84	10.49	12.34	144.36
10.84	161.06	11.44	243.72
10.84	12.42	11.44	245.48
10.84	10.49	12.34	46.31
10.84	236.44	11.44	294.93
10.84	10.55	12.34	80.89
10.84	294.80	11.44	294.93
10.84	10.55	12.34	80.89
10.84	232.35	11.44	164.69
10.84	10.49	12.34	144.36
10.84	161.06	11.44	243.72
10.84	12.42	11.44	245.48
10.84	10.49	12.34	46.31
10.84	236.44	11.44	294.93
10.84	10.55	12.34	80.89
10.84	294.80	11.44	294.93
10.84	10.55	12.34	80.89
10.84	232.35	11.44	164.69
10.84	10.49	12.34	144.36
10.84	161.06	11.44	243.72
10.84	12.42	11.44	245.48
10.84	10.49	12.34	46.31
10.84	236.44	11.44	294.93
10.84	10.55	12.34	80.89
10.84	294.80	11.44	294.93
10.84	10.55	12.34	80.89
10.84	232.35	11.44	164.69
10.84	10.49	12.34	144.36
10.84	161.06	11.44	243.72
10.84	12.42	11.44	245.48
10.84	10.49	12.34	46.31
10.84	236.44	11.44	294.93
10.84	10.55	12.34	80.89
10.84	294.80	11.44	294.93
10.84	10.55	12.34	80.89
10.84	232.35	11.44	164.69
10.84	10.49	12.34	144.36
10.84	161.06	11.44	243.72

A	B	C	D	A	B	C	D
20.02	136.98	11.62	168.62	33.34	206.78	12.34	252.46
33.80	43.11	9.38	86.29	22.72	124.48	11.78	158.99
34.41	89.12	11.75	135.27	27.89	123.52	12.09	163.51
32.86	215.10	12.86	260.83	32.06	208.34	11.62	252.02
19.68	259.92	10.14	289.74	24.87	194.99	8.74	228.60
26.04	140.34	12.38	178.76	28.64	152.12	11.66	192.42
29.87	264.52	12.61	307.00	31.99	45.80	11.30	89.09
32.48	164.23	11.47	208.18	18.70	168.75	10.29	197.73
31.87	210.72	9.14	251.73	34.86	248.99	8.75	292.59
33.93	258.11	11.44	303.48	21.72	82.36	12.24	27.44
22.56	177.68	11.53	211.77	19.83	206.98	8.69	116.32
32.59	238.62	10.51	281.72	22.64	262.39	9.40	168.70
28.83	138.63	9.01	176.47	24.77	23.48	54.13	10.94
35.72	146.70	13.04	195.45	23.01	106.39	10.15	151.38
26.05	179.40	10.95	216.40	26.07	169.40	10.49	205.96
24.63	129.39	11.64	165.66	28.47	222.21	8.55	259.23
21.08	242.71	12.18	275.96	28.23	186.98	12.96	228.17
31.80	95.16	12.15	139.11	30.90	206.56	12.68	250.14
31.11	199.84	9.57	240.53	26.10	117.07	8.88	152.05
23.78	200.29	11.06	235.13	30.48	240.39	9.30	280.18
22.69	229.50	8.59	260.78	27.23	113.65	8.75	149.63
26.99	121.17	9.10	157.26	24.86	258.61	11.26	294.73
30.57	168.96	11.69	211.23	35.59	207.63	12.18	255.40
25.16	223.96	10.86	259.98	35.85	108.56	11.51	155.91
19.44	173.30	12.87	205.61	25.59	166.92	10.19	202.71
26.11	135.38	10.94	172.43	29.13	224.08	13.13	266.34
25.21	172.69	8.99	206.88	33.99	234.69	11.97	280.64
28.71	100.84	9.58	139.13	22.32	244.73	12.36	279.41
34.72	156.71	9.20	200.63	24.80	60.34	9.80	94.94
33.29	219.63	10.09	263.01	36.04	115.58	10.13	161.74
30.26	227.79	10.64	268.69	32.11	160.51	13.09	205.71
21.00	194.37	9.80	225.17	20.21	194.43	9.21	223.85
30.23	196.72	12.15	239.10	19.24	100.38	11.92	131.54
32.80	238.32	8.48	279.60	23.46	254.54	12.13	290.12
29.05	230.71	11.57	271.33	31.29	123.88	10.37	165.55
20.62	172.77	12.13	205.51	34.74	150.84	13.10	198.67
23.40	161.86	11.95	197.20	18.85	234.56	9.11	262.53
24.98	77.26	11.50	113.73	27.04	58.28	12.94	98.27
34.58	133.77	8.69	177.03	18.90	93.03	8.63	120.56
25.39	109.98	8.73	144.11	28.17	83.27	11.04	122.48
25.53	59.59	10.80	95.92	31.14	75.93	10.59	117.66
24.18	103.91	11.58	139.68	18.89	244.79	11.89	275.57
29.01	112.39	8.82	150.21	27.26	51.08	11.77	90.11
22.90	140.40	11.06	174.35	27.08	89.35	10.92	127.35
							31.62
							100.20
							8.87

<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
23.32	142.50	12.46	178.29
18.93	202.32	10.67	231.92
24.12	226.31	10.11	260.54
23.04	61.22	11.28	95.55
31.63	246.99	12.98	291.59
30.24	247.35	11.11	288.69
33.79	132.12	12.43	178.34
27.23	112.14	11.34	150.71
27.72	171.95	12.15	211.82
22.31	161.81	10.87	194.99
20.45	76.19	10.04	106.68
26.54	229.37	9.08	264.99
28.05	59.00	11.35	98.40
26.85	128.96	11.67	167.47

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**APPENDIX B**  
**WORK BREAKDOWN STRUCTURE (WBS)**  
**COST ELEMENT STRUCTURE (CES)**

<b>WBS/CES</b>	<b>Description</b>	<b>Explanation</b>
1.0	RDT&E	The RDT&E phase is from the beginning of the program up to the acquisition and implementation of new products. Total RDT&E is the sum of cost element number 1.0 through cost element number 1.09.
1.01	Program Planning and Management	All costs incurred in the technical and business management effort by both Government and contractor. Includes costs to acquire contracts. Supports, exclusively, the development phase of the system
1.02	Development Hardware	Includes costs incurred to acquire, lease, or modify all hardware necessary to design, engineer, develop, and modify hardware components and software of the system in this phase including GFE. Includes any related civilian and military services costs.
1.03	Development Software	Includes all costs incurred to acquire or lease all software necessary to design, engineer, develop, and modify software of a system in exclusive support of this phase, including GFE. Software which is acquired or modified during this phase but which supports the operations of the fielded system will be reflected under element 2.02, Software.
1.04	Development Document/Data	Includes the cost of preparation, revision, and reproduction of drawings, test plans, testing procedures, manuals and other documentation. Also includes the costs of any contracts and civilian and military labor costs to collect, analyze, and distribute data required in support of the system development.
1.05	Development Training	Includes all costs incurred in developing appropriate training services, devices, accessories, aids, and equipment used to facilitate instruction through which personnel will acquire sufficient concepts, skills, and aptitudes to operate and maintain the information management system. This includes all efforts associated with design, and development, of training equipment as well as the execution of training services needed for the development of a system.
1.06	Development System Test and Evaluation	Includes cost of using prototype, production, or specially fabricated hardware to obtain or validate engineering data on the performance of the automated information system. Test articles which are complete units (i.e., functionally configured as required by the mission equipment) are excluded. Development, component acceptance, etc., testing which will be specifically associated with the production hardware element (2.01) unless these tests are of special contractual or engineering significance (e.g., associate contractor), are also excluded.

<b>WBS/CES</b>	<b>Description</b>	<b>Explanation</b>
1.07	Development Logistics Support	Includes all costs in developing appropriate logistics plans and services, through which logistical support will be necessary to support operations of the automated information system. Includes all logistical support in support of this phase of the program.
1.08	Development Facilities Modification/ Construction	Includes all costs in the construction and modification of facilities required to support development of the automated information management system and/or testing the prototype.
1.09	Other Development	All system development costs incurred and not detailed above for the engineering and development of the system. Specified in each subelement of this cost element.
2.0	Investment	Total investment is the sum of cost element number 2.0 through cost element number 2.18.
2.01	Hardware	Cost categories under hardware below include when applicable, vendor contracts, GFE, other Government contracts, and organic efforts used to produce program hardware. Also included are costs for first destination transportation, warranties, and user's manuals. Includes the depreciated value for government owned equipment that will be utilized by the system regardless of when it was purchased and the reason for which it was purchased. Includes the lease for entire life cycle or until terminated or the equipment is purchased. Leased costs are included under investment until FOC. After FOC lease costs are included under 3.06.
2.011	Processing Units	Cost element captured under cost subelements 2.0111 through 2.0113.
2.0111	Central Processing Units	All costs associated with the production and/or purchase or lease of the central processing units. Includes mainframes and associated hardware.
2.0112	Intermediate Processing Units	All costs associated with the production and/or purchase or lease of the intermediate processing units. Includes minicomputers and associated hardware
2.0113	Terminal Processing Units	All costs associated with either production and/or purchase or lease of the terminal processing unit. Includes minicomputers, PCs, laptops, terminals, etc., and associated hardware.
2.012	Peripheral Devices	Cost element captured under cost element 2.0121 through 2.0123.

<b>WBS/CES</b>	<b>Description</b>	<b>Explanation</b>
2.0121	Printers	All costs associated with the production and/or purchase or lease of printers are captured under the following cost subelement numbers: 2.01211 through 2.01213.
2.01211	Laser Printers	As applicable.
2.01212	Speed Printers	As applicable.
2.01213	Common Impact Printers	As applicable.
2.0122	Storage Devices	All costs associated with the production and/or purchase or lease of storage devices. Disk drivers and optical storage are listed separately when they are not a functioning part of the mainframe.
2.0123	Other	All costs associated with the production and/or purchase or lease of other peripheral devices.
2.013	Communication Hardware	Contains all costs for hardware to establish the connectivity required by the specific system. Captures: 2.0131 through 2.0136.
2.0131	Wide-Area Gateways (Broad Band)	All costs associated with the production, purchase, installation and/or lease of wide-area gateways (broad band) necessary to establish the connectivity required by the automated information system.
2.0132	Wide-Area Networks	All costs associated with the production, purchase, installation and/or lease of wide-area networks necessary to establish the connectivity required by the automated information systems.
2.0133	Modems	All costs associated with the production, purchase and/or lease of modems necessary to establish the connectivity required by the automated information systems.
2.0134	Local Area Network (LAN)	All costs associated with the production, purchase, installation and/or lease of local area networks necessary to establish the connectivity required by the automated information system. See instructions for pro-rata share.
2.0135	Crypto	All costs associated with the production, purchase, installation and/or lease of crypto devices necessary to establish the security in connectivity required by the automated information system.

WBS/CES	Description	Explanation
2.0136	Other Communications Hardware	All costs associated with the production, installation, purchase, and/or lease of other communication devices necessary to establish the connectivity required by the automated information system.
2.014	Other Hardware	All other hardware cost not detailed, such as vehicles and mobile structures. See instructions about possible additional subelements.
2.02	Software	Includes program vendor contracts, other government contracts, and organic development used to procure or develop program software. (See element 1.03). Includes initial licensing.
2.021	Commercial Off-the-Self (COTS)	All software that is available in the commercial market and that requires little or no modification to utilize. Macro, mini and micro are shown separately.
2.0211	Operating System Software	All costs for internal system software necessary to transform the hardware into a functioning computer. Included is the software necessary to interface and operate peripheral devices.
2.0212	General Administrative Software	General application software, such as, LOTUS, WordStar WordPerfect, various statistical and mathematical packages, and general data base management packages needed to perform general tasks and improve the productivity of the users.
2.022	Application/Mission Software	All costs required to produce fully usable, deliverable lines of application software. All costs to plan, design, develop, test, debug, validate, and document application software necessary to automate a specific function or operation and integrate that function into the overall AIS. Includes converting an AIS from an old system to a new system, software developed costs should reflect the amount of code to be transferred without modification, transferred with minor modification, bridged, redesigned, and eliminated.
2.0221	Contractor Developed Software	All costs for contractor-developed application software. Included are program management, G&A, and all contractor associated costs.
2.0222	Organically Developed Software	All costs associated with in-house developed software. Estimated labor costs are based on fully burdened labor rates.
2.023	Communications Software	All costs for software to establish the connectivity required by the specific system.

<b>WBS/CES</b>	<b>Description</b>	<b>Explanation</b>
2.024	Other Software	All costs associated with the production, purchase and/or lease of any other software required by the automation information system.
2.03	System Integration, Test, and Evaluation	Includes all costs for (not software) related production test activities that are identifiable with integration of the system. Included is the cost of test equipment, hardware, and/or a software to obtain or validate data. Also included is the cost of planning, executing, support, data reduction, and reports from such testing and test items consumed in the conduct of such operations, and any contract costs, as well as the cost of design and production models specimens, fixtures, and instrumentation in support of the test program. The element also includes the costs of system operation test activities to ensure proper system installation and operation and the cost of all efforts associated with the design and production of models, fixtures, and instrumentation in support of the test program. Included are vendor contracts, GFE, other government contracts and any organic development used to procure system integration, test, and evaluation.
2.04	Program Management	Includes all costs of civilian and military personnel assigned to the System Project Management Office and the costs of operating the PM Office up to FOC. Includes the cost of any contractual support. Contractor support is captured as a subelement of this cost element. System Management costs after FOC are included in ES 3.011, System management.
2.05	Training	Includes all costs for producing devices, accessories, aids, equipment, facilities, training services, data, and parts used to facilitate instruction through which personnel will be trained to operate and maintain the information management system. Includes the management resources used in structuring the training program and the training of initial personnel during the investment phase (training the trainers).
2.06	Support Equipment	This element includes those costs incurred for the equipment required in support of this program or portions of this program, while not directly engaged in the performance of its mission. Includes GFE which may, or may not, be peculiar to the program but which is not considered a part of the total system.
2.07	Initial Spares	Includes components, assemblies, and subassemblies required for initial stockage and related wholesale pipeline in support of the implementation of the information management system, from the first to the last end item implemented. This element should contain all costs incurred in the supplying of reserve spares, and repair parts to stock the initial pipeline in both peacetime and wartime. These costs include transportation and storage of these supplies and spares. (See element 3.04).

<b>WBS/CES</b>	<b>Description</b>	<b>Explanation</b>
2.08	Initial Cataloging	This element contains all costs incurred in initially establishing this system in the Service and DoD catalog systems.
2.09	Initial Data Requirements	Includes all costs incurred in the preparation, revision, and reproduction of drawings, test plans, testing procedures, manuals, and other documentation for the operation of the system. Includes the cost of contracts, to collect, analyze, and distribute data required to procure, operate and support the developed system.
2.10	Site Activation	This element contains all costs incurred in the preparation and activation of an existing site for the acceptance and operation of the system. Includes all costs of construction and modification of facilities that are required for the successful fielding of the system and meets the following test: The information system cannot be fielded without the construction and the need for these facilities will terminate if the system fielded is canceled.
2.11	Industrial Facilities	This element contains all costs incurred for the acquisition (usually separately) of nongovernment facilities for the production and/or support of the system during the investment phase.
2.12	Warranties	Includes costs for warranties and special warranties on both hardware and software (identified separately) purchased for this system. See instructions.
2.13	Initial Supplies	Includes all costs for stocking of consumable supplies for the operation of the information management system, i.e., computer paper, disks, tapes, forms, ribbons, etc.
2.14	Engineering Changes	Includes all costs incurred in making engineering changes to the system hardware throughout the system life. Does not include hardware upgrades.
2.15	Preplanned Product Improvements	See instructions.
2.151	Hardware Preplanned Product Improvements	See instructions.
2.16	Upgrades	Includes all nonpreplanned product improvement costs throughout the system life. Assumed turnover of equipment every 5 years.

WBS/CES	Description	Explanation
2.17	Office Furniture and General Support Equipment	Includes office and general support furniture required to support the information management system for the sole use of AIS. Office equipment to support management functions are excluded.
2.18	Data Upload	Includes costs of inputting the data from old manual system or preparing the old automated form of data for input to the new automated system and uploading the data onto the new system.
3.0	Operating and Support	The O&S phase includes operations, maintenance, and support of the ADP system or system increment after it has completed acceptance test and is turned over to the user. Addition of 3.01 through 3.
3.01	System/ Material/Item Management	This element includes the costs incurred in the process of acquiring, employing, and retaining personnel. This includes fully burdened salaries, benefits, relocation expenses, retirement actual, required TDY, and all costs associated with the personnel of AIS. It includes the services and resources needed to manage the program.
3.011	System Management	This element contains all O&S costs for configuration, material, and systems management associated with the distribution, warehousing, cataloging, technical support, personnel, and facilities for system-specific activities. It includes the program management function after FOC, and the centralized control, management, and design of the AIS throughout its life cycle.
3.012	Operating Personnel	This element includes the decentralized system administrators and system operators. It includes the personnel necessary to operate the hardware. Functional personnel who interface with the system are included in 3.013.
3.013	Functional Personnel	This element includes all of the functional personnel required to operate, use, or perform actions on the automated system to accomplish the mission and approved at Milestone 0.
3.014	Training	This element contains all costs associated with services, devices, accessories, aids, equipment, facilities, and parts used to facilitate instruction through which personnel will acquire sufficient concepts, skill, and aptitudes to operate and maintain the information management system. This element includes the effort associated with the maintenance of training equipment, as well as the execution of training services. It also includes TDY of Government personnel for training, and the cost of any contracts to train personnel.
3.02	Unit/Base Operations	Operators, direct support personnel, utilities, and consumables needed to operate the new ADP system and its support personnel.

<b>WBS/CES</b>	<b>Description</b>	<b>Explanation</b>
3.021	Power Requirements	The costs of commercial power required for the operation and cooling of the system hardware including peripheral devices (Equipment listed in CES 2.01).
3.022	Facilities Maintenance	The cost of real property upkeep or rental fee paid for occupancy of facilities. It does not include facilities occupied by users in a distributed system unless the facility is dedicated to the system operations. Included are costs for minor construction and maintenance of real property and upgrade of facilities to accommodate planned system upgrades.
3.023	Communications	This includes all required communications from the local (base) level through the DoD level.
3.0231	Leasing/Charges	The costs of DDN monthly charges, leased long lines, communications fees and other charges generated to interconnect components of the AIS and interface with other systems (including input and output).
3.0232	System Maintenance	The costs of leasing maintenance of local area networks and intra-base communications. Shared costs are prorated.
3.024	Base Operating Support (BOS)	The allocated cost of providing personnel support to the system's personnel. This includes medical, personnel, MWR, financial and subsistence support to people. It is normally based on the population of the system personnel being supported.
3.025	Miscellaneous Support	All other resources necessary to support the AIS in the local area. See instructions.
3.03	Hardware Maintenance	Includes cost incurred in providing maintenance and repair for the system hardware regardless of who has ownership of the equipment or responsibility for repair.
3.031	Contract Maintenance Support	These elements contain all costs for maintenance performed by contract or covered by an Inter-Service Support Agreement (ISSA).
3.0311	Processing Units	See instructions and CES 2.011 for breakout.
3.0312	Peripheral Devices	See instructions and CES 2.012 for breakout.
3.0313	Communications Hardware	See instructions and CES 2.013 for breakout.
3.0314	Other Hardware	Includes maintenance of the equipment identified in CES 2.014 and 2.06

WBS/CES	Description	Explanation
3.032	Organic Maintenance	These elements contain all costs when maintenance is done by in-house personnel. This is primarily the cost of the personnel and facilities required for maintenance. Replenishment spares are included in CES 3.071 and replenishment bits and pieces are included in CES 3.073. Same breakout as that contained in CES 3.031.
3.04	Second Destination Transportation	This element includes costs of second destination transportation required to any destination after the contractor has delivered the system. Excluded are shipping costs associated with depot repair.
3.05	Environmental & Hazardous Material Storage and Handling	This element contains all contractor support and in-house personnel costs associated with handling and storage of environmental and hazardous material associated with the specific AIS.
3.06	Contract Leasing	This element contains all costs associated with leasing hardware ADP equipment for the life cycle of the system when not covered under 2.04. See instructions.
3.07	Operations Investment	Replenishment spares and repair parts to support the new DP system operations and sustaining engineering.
3.071	Replenishment Spares	Includes costs incurred in the acquisition and supplying of spares to resupply the initial pipeline established during the investment phase. Also includes related transportation costs. See CES 2.07 for initial spares.
3.072	Fuel & POL	This element includes the costs for fuel, oil, and lubricants to operate the system and support equipment. Examples are fuels for generators and vehicles and coolants for environmental central systems.
3.073	Replenishment Supplies and Consumables	This element contains all costs associated with acquisition, transportation, and storage of replenishment supplies and consumables required for the life cycle of the specific system. Includes costs incurred in the acquisition of parts, supplies, and consumable to resupply the initial pipeline identified in CES 2.13. Also includes transportation cost incurred.
3.08	Software Maintenance	Includes vendor contracts, GFE, other Government contracts, facilities upkeep, and ISSAs. It does not include system management activities such as system redesign, which are covered under CES 3.011, or programmers/operation covered under CES 3.012. All software maintenance costs including related local contract services for research and studies that contribute to software maintenance planning, development, and maintenance are included.

<b>WBS/CES</b>	<b>Description</b>	<b>Explanation</b>
3.081	Contract Software Maintenance	All local contract services software maintenance costs including research and studies that contribute to software maintenance planning, development and maintenance.
3.0811	Commercial off-the-Shelf (COTS)	All software that is available in the commercial market and that requires little or no modification to use. Mainframe, mini, and micro applications are shown separately.
3.0812	Operating System Software	This element includes licensing and update costs of the operating system software. See CES 2.0211.
3.0813	General Administrative Software	This element includes licensing and update costs for commercial application communication software. See CES 2.0212.
3.0815	Communication Software	This element covers the maintenance of communications software that is system specific. Communication COTS software is covered under CES 3.0811.
3.082	Organic Software Maintenance	This element includes the staffing (fully burdened), facilities and equipment required to maintain, modify, and debug software, including those efforts to adapt or tailor software to local requirements. It is assumed that COTS software (CES 3.0811) will not be maintained in-house. See instructions.
3.09	Parallel System Operations	Cost to maintain status quo until the new system is fully operational.
4.0	Environmental Quality	Includes all costs associated with environmental studies, protection and enhancement.
5.0	Disposal	This element contains all costs/(residual value) associated with the disposition of equipment, hardware, and software upon replacement and/or upgrade throughout the AIS life cycle.